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BULLETIN OF THE

TAYLOR SOCIETY

AN INTERNATIONAL SOCIETY TO PROMOTE THE SCIENCE
AND THE ART OF ADMINISTRATION AND OF MANAGEMENT

IN THIS NUMBER

Cost Control for Fluctuating Production

F. F. HOVEY and C. E. K. MEES

The Central Institute of Labor at Moscow

V. MOURAVIEFF

A Method of Measuring and Rating Management

GEORGE G. BERGER

And Other Papers

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3. To promote the scientific study and teaching of the principles governing organized effort, and of the mechanisms of their adaptations and application under varying and changing conditions.
4. To promote general recognition of the fact that the evaluation and application of these principles and mechanisms are the mutual concern of the community, the worker, the manager and the employer.
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Comment

IN THE April issue it was announced that the theme of the December Meeting had been inspired by the Hoover Committee report "Recent Economic Changes." On the following page of this issue will be found the tentative program of the meeting accompanied by comment on the Committee's report.

AMONG other statements in the report is the following: that one factor accounting for the general activity and prosperity of the past eight years is "the co-operation of labor to increase productivity." This attitude of labor is again confirmed by the significant letter (page 187) of William Green to the International Management Congress which was held in Paris in June.

THE major papers recorded in this issue will appeal to a variety of interests. Mr. Hovey's paper discusses a subject of especial interest to accountants, plant managers, and all concerned with the construction of budgets. Mr. Mouravieff's account of the organization and work of the Russian Central Institute of Labor indicates that in that country research and education on behalf of industry are progressing steadily.

IT WILL be of interest to our readers to know that in addition to the Central Institute of Labor, a research and educational institution, there exists a co-ordinated institution of active engineers whose function is to install better methods of management in Russian enterprises—a group of industrial engineers under government auspices and direction. Within recent months Mr. Chebotarev and other members of Orgstroy (Institute of Scientific Management of U. S. S. R.) have been in the United States on a mission of observation of American methods of management.

THE PAPER by Mr. Berger is an interesting contribution of one of the younger engineers. It should be highly suggestive to the resident staff of an enterprise which is disposed and competent to rate its own efforts objectively. Mr. Board's article presents the generalizations based on his experience as director of the Yale Placement Bureau in New York.

December Meeting Program

Theme: The Significance to Management of Recent Economic Changes

WE HAVE been so impressed by the report of the Hoover Committee on Recent Economic Changes that it has been made the basis of the program of the December meeting—New York, December 4-6, 1929. We refer our readers to an adjacent comment on that report.

The report is almost entirely a record of the facts discovered by the Committee. However, accompanying the record of facts is a brief set of very broad generalizations by the Committee. None of these is so presented as to indicate—perhaps we should say explore—its bearing on the managerial policies of individual industries or enterprises. Therefore it is the purpose of the December meeting program to consider in a practical way the significance to management of the facts and conclusions in the report, and the major questions of managerial policy raised by it. The *tentative* program follows:

Wednesday Forenoon, December 4

Registration and reception of members

Wednesday Afternoon, December 4

General Session

Paper: Analysis of "Recent Economic Changes" with emphasis on subjects of practical interest to management.

Wednesday Evening, December 4

General Session

Paper: Are there practicable steps toward an industrial equilibrium?

Paper: What bearing has industrial equilibrium on regularity of operations and of employment?

Thursday Forenoon, December 5

General Session

Paper: What are the controllable and the uncontrollable factors in management?

Paper: Is there an optimum size of organization? (involving the problems of centralization vs. decentralization, effective control, etc.)

Thursday Afternoon, December 5

Simultaneous Group Sessions

1. Will unit labor costs continue indefinitely to be reduced at the same rate as during the past decade?

2. What must be the characteristics of an adequate accounting for distribution costs?

3. Is the fatigue element in computing standard times based on an adequate research into fatigue?

4. What are the limits to standardization of items involving æsthetic qualities?

5. Organization of a retail stores room.

6. The progress and importance of industrial standardization.

7. Can any sound managerial policy assume stability of the demand for its products?

8. The technique of methods study.

9. The practical value of economic data to management.

Thursday Evening, December 5

Annual Dinner—Addresses

Friday Forenoon, December 6

General Session

Paper: Is it good management policy to assume that consumer wants for particular goods are insatiable?

Paper: Is it a sound assumption that consolidation invariably, or even usually, results in reduction of distribution expense?

Friday Afternoon, December 6

General Session

Paper: How shall large groups be organized and managed to secure the ability, capacity and energetic effort of each individual as though he were in a business of his own.

Paper: A case of joint regulation of industrial relations in a textile plant.

Friday Evening, December 6

General Session

Three papers on the progress of research-determined managerial control in three leading industries.

Recent Economic Changes¹

THESE two volumes will be read by every forward-looking executive eventually; therefore why not now? As we indicated in the June issue of the BULLETIN, there is a formula of reading which simplifies the problem for the busy man: read first the report of the Committee (seventeen pages); then the Introduction by Edwin F. Gay (twelve pages); then the conclusions at the ends of the fact-reporting chapters (aggregating some forty pages); then the concluding chapter by Wesley C. Mitchell (seventy pages); and finally the remainder of the report in such order as is dictated by one's particular interests.

The reader should orient himself in advance by perception of several characteristics of this report.

1. The Committee itself did not conduct the survey here reported. It acted principally as a planning group. The report is *to* the Committee, not *by* it.

2. The survey was conducted on behalf of the Committee by a special staff of the National Bureau of Economic Research, Inc. A more dependable research institution could not have been secured. The report is a report of this staff to the Committee.

3. The National Bureau of Economic Research, Inc., is a research institution of which the object is "to ascertain and present to the public important economic facts and the interpretation thereof in a scientific and impartial manner, free from bias and propaganda." Its technique is that of quantitative measurement and its interpretations are interpretations of what the facts are, rather than of their significance.

4. An interpretation of the significance of the

reported facts is to be found in the seventeen page report of the Committee to which the Bureau made its fact-finding report. But this interpretation is brief and along very broad lines.

It is apparent, therefore, that an executive must approach these two volumes as a record of facts and must not expect to find interpretations which indicate what the significance of the facts may be to his business, his industry or industry generally. It will suggest to him questions relating to his managerial policies, but will not answer them directly.

In this matter we believe the Committee might have ventured to be more constructive. It appears to have satisfied itself with generalizations on which all of its members could easily agree. The result is a series of conclusions generally held prior to the searching labors of the survey staff. Many of these are mild when compared with what may be found in the staff's report. For instance, the Committee makes emphatic the mild statement that "the distinctive character of the years from 1922 to 1929 owes less to fundamental change than to intensified activity"; notwithstanding the significant statement by Edwin F. Gay in the introduction to the Bureau's report that "The chief characteristics of the present economic phase . . . are, it is true, evolved logically from what has preceded. . . . But there seem now to be differences of degree which approach differences in kind." A difference in degree approaching a difference in kind has more significance for public policies and individual managerial policies than a mere intensification of activity.

The outstanding generalizations of the Committee are: that the present conditions of industry owe less to fundamental change than to intensified activity; that the activity is not equally distributed among industries; that increased use of power has increased the speed of production; that there has been marked spread in the source and use of credit; that rising wages and relatively stable prices have increased consumption; that there has been marked increase in production and a corresponding increase in human wants; that wants are practically insatiable; that consumers in the midst of an abundance of items are exercising options in consumption; that there is more leisure, and more mass services, in part a consequence of the demands of

¹*Recent Economic Changes in the United States, Report of the Committee on Recent Economic Changes, of the President's Conference on Unemployment, Herbert Hoover, Chairman, 2 Vols., New York, McGraw-Hill Book Company, 1929.*

(Continued on page 186)

Cost Control With Fluctuating Production¹

A Description of a Definite System for Making Up Cost Control Sheets Under Fluctuating Production

By F. F. HOVEY and C. E. K. MEES²
Eastman Kodak Company, Rochester, N. Y.

MODERN managers must depend on various written reports to act as barometers of the condition of their businesses. Their decisions, as well as their estimates of the worth of their subordinates, are largely dependent upon the ideas conveyed by these periodic statements. Hence, the character of these reports is a matter of first importance. The cost statement is the common barometer of the economy and efficiency of the management of a department or industrial plant and it is with this statement that this paper deals.

The annual profit and loss statement of a business tells in a definite and unmistakable manner whether the business *has been* a financial success, but it is too late to be of any use so far as that year is concerned. The current cost sheet must be the report depended upon to guide management during the year to a satisfactory profit at the end of the year. To do this, there are several conditions that must be met by this report. It must be as nearly accurate as possible. It must appear promptly. It must tell not merely what has happened during the last period, but it must give a clear *idea* of how the business is progressing and what the profit for the year is likely to be in relation to what it should be.

In the case of a manufacturing department in which the production fluctuates considerably at different periods, the estimated cost report which should be prepared presents special difficulties, and the purpose of this paper is to propose a definite system by which cost control sheets can be prepared when the production fluctuates. If the production of a department is not constant, the actual costs obtained are very likely to mislead the man-

agement as to the efficiency with which the department is being conducted. In Table 1 are shown the figures for the production, materials, labor, expenses, and the total cost for a department in which the production, quarter by quarter, varied very greatly indeed.

TABLE 1

	PRODUCTION	COST PER UNIT			Total
		Materials	Labor	Expenses	
1st quarter	4,360	48.7	172	84.0	304.7
2nd quarter	12,113	35.8	91	56.1	182.9
3rd quarter	17,648	41.3	76	31.3	148.6
4th quarter	7,280	38.0	121	73.3	232.3
AVERAGE FOR YEAR	—	39.8	98.4	51.6	189.8

The selling price for this department was 166, so that the department was clearly running at a loss. The management was well aware of this and the department head instituted changes in production methods which resulted in a cost for the first quarter of the next year of 248.4, the production being approximately the same as for the corresponding quarter of the year before. The question for the management is whether the changes have accomplished the end; that is, whether in the current year the cost of production will be sufficiently lower to give a satisfactory profit with a selling price of 166. It is clear that if the cost is to be the same as for the first quarter, there will be a heavy loss, but owing to the variation in production the cost is expected to go down for the remainder of the year.

At first sight it would seem that until the year is completed it is impossible to tell whether the department is running profitably or not, but, as will be shown in this paper, it is quite possible to calculate what the cost will be for any level of production and thus to find out whether the cost at any time is such as to give a satisfactory profit on the whole year's work or not. This assumes

¹Paper presented before the New York Metropolitan Section of the Taylor Society, New York, May 16, 1929.

²The authors wish to extend credit to and to thank the employees of the various departments at the Kodak Park Works of the Eastman Kodak Company who co-operated in making the preparation of this paper possible. Credit is especially due to Miss Lois E. Patchen, who made the original drawings for the illustrations.

that the variation of production through the year is known, and in most seasonal trades it is known fairly accurately from previous experience. As a matter of fact, in the case given, it was found possible to calculate a corrected average cost giving the same results for the year. The figures obtained are shown in Table 2.

TABLE 2

	ACTUAL COST UNCORRECTED FOR PRODUCTION	COST CORRECTED TO EQUAL PRODUCTION
1st Quarter	304.7	207.0
2nd Quarter	182.9	181.6
3rd Quarter	148.6	180.1
4th Quarter	232.3	185.3
AVERAGE FOR YEAR	189.8	185.5

TABLE 3

PRODUCT "A"—PLANT "1"

	ACTUAL COSTS May, 1928	ESTIMATED COSTS May, 1928
Production	15,825	
Cost per Unit		
Materials	\$.44	\$.48
Labor	.52	.56
Expense	.74	.78
TOTAL COST	\$1.70	\$1.82
	June, 1928	June, 1928
Production	19,834	
Cost per Unit		
Materials	\$.51	\$.48
Labor	.48	.50
Expense	.68	.66
TOTAL COST	\$1.67	\$1.64
	July, 1928	July, 1928
Production	23,642	
Cost per Unit		
Materials	\$.52	\$.48
Labor	.44	.46
Expense	.67	.58
TOTAL COST	\$1.63	\$1.52

Correcting the first quarter of the next year in the same way, a corrected cost was found of 172.5 in comparison with the actual cost of 248.4. This showed that while the economies made in the department had been very beneficial, they were not sufficient, since the sale price was 166 and the department was still, therefore, running at a loss. This knowledge enabled the corrected cost for the third quarter to be reduced to 152, and in the

course of time the cost was reduced to 120, leaving a very satisfactory profit on the sales.

To take a less glaring example, let us consider the figures shown in Table 3. This table shows the actual costs for three months of a department in which the production was increasing as the year progressed. It is seen that there is a steady but small reduction in cost and if these figures were presented to a manager he would probably be satisfied with them, though it might seem to him that the reduction was small in view of the increased production. But, in the table also are shown costs which have been estimated in advance for the different amounts of production by a method which will be explained later. It will be seen that whereas the May cost was below the estimate, the July cost was considerably above the estimate, so that the department clearly needs attention, since the reduction in cost is by no means that which should have been attained for the increased production.

The solution of the problem presented by this paper involves a combination of some of the principles and methods of cost accounting, statistics and industrial engineering. Items must be analyzed and segregated from the point of view of the cost accountant. These items may then be illustrated by the common methods of statistics and lastly compared with standards arrived at through methods of time study and the determination of correct standard practice.

From the accountant's viewpoint cost items may be divided into three general classes.

First, there are fixed charges, or items that are constant for a given period of time. This includes such items as rent of building, depreciation on equipment, insurance, taxes, etc. The unit cost for such items will decrease as production increases.

Second, come items that vary directly with production, such as material. The unit cost for these items will be constant regardless of production, within reasonable limits.

Third, are the items which are not entirely of either class but depend both on the extent of production and the duration of time. Maintenance and sundry supplies usually fall into this group. The unit cost for items of this character will decrease as production increases, but not as rapidly as in the case of fixed charges.

We shall now consider methods of portraying the effect of varying production on these types of cost

items, by means of statistical charts, examples of which are reproduced here.

In Figure 1, we have a simple arithmetic chart showing the effect of fluctuating production on unit cost for (A) an item of fixed expense, and (B) an item that varies directly with production. It will be noted that as production increases, the cost per unit for (A) decreases, but the decrease is at a decreasing rate. This relationship gives a curve which is hyperbolic in shape. On the other hand,

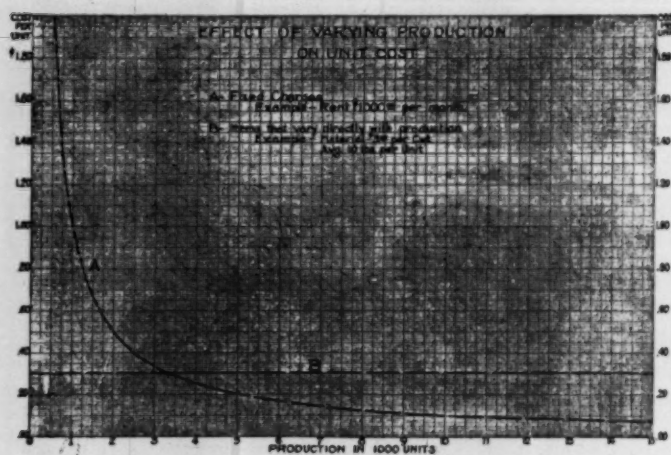


Figure 1

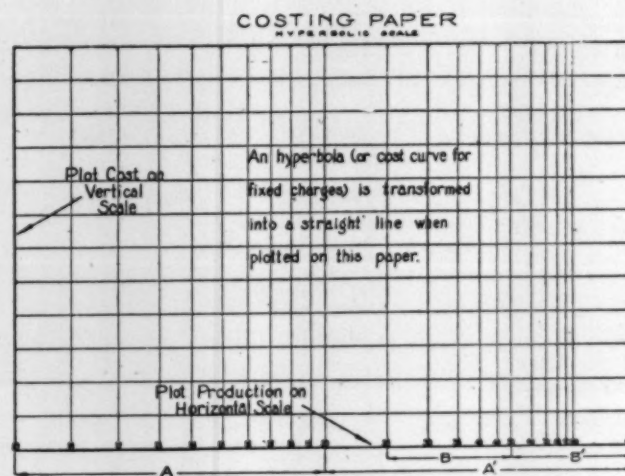
the cost for (B) is the same regardless of production, and therefore is represented by a straight horizontal line. In the case of (A) it is difficult to determine the exact location of the curve without a large number of points. This is particularly cumbersome in more complicated cases, and especially when the exact nature of the item has not been determined.

In order to overcome this difficulty, a special costing graph paper can be used. An example of this special paper is shown in Figure 2. This paper is called hyperbolic or reciprocal paper. The horizontal scale is so ruled that by bisecting the distance from any point to the extreme right of the paper, the location of the point of twice that value will be obtained. Thus the distance (A) from 10 to 20 is equal to the distance (A') from 20 to the right edge of the sheet, and similarly the distance (B) from 25 to 50 is equal to the distance (B') from 50 to the right hand edge of the sheet. Therefore, if this process of bisecting is repeated indefinitely, we would approach but never reach the right edge. Therefore, that point

may be labeled infinity. The vertical scale of this paper is a simple arithmetic scale, as the illustration will show.

Now, if cost figures for varying production are plotted on this paper with cost on the vertical or arithmetic scale and production on the horizontal or hyperbolic scale, the result will be a straight line. This will be true regardless of the nature of the item, as will be brought out presently.

It is not necessary to use specially ruled paper,



The same result may be obtained by plotting the cost against the reciprocal of the production on a reversed arithmetic scale (Reciprocal Scale).

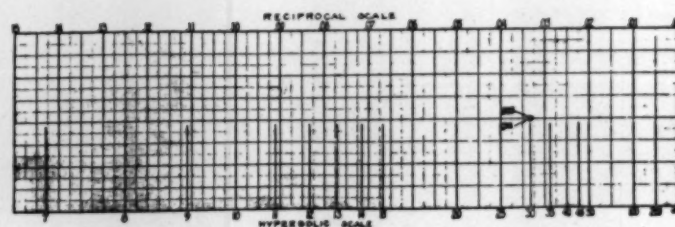


Figure 2

however, as is shown by the lower part of Figure 5. The same result may be accomplished by plotting the cost per unit with the reciprocal of the production on a reversed arithmetic scale. For example, the point (30) on the hyperbolic scale is the same as its reciprocal (.033) plotted on the reciprocal scale.

Simple examples of the application of this idea are found in Figures 3, 4, and 5. Figure 3 shows the curve for a fixed charge plotted on an arithmetic

scale in the chart above and on a hyperbolic scale in the chart below. In this case, the result on the hyperbolic scale is a straight line passing through the unit cost for the production indicated on the extreme left and zero at the extreme right; since, if production is increased indefinitely, the unit cost for an item of fixed charge will approach zero.

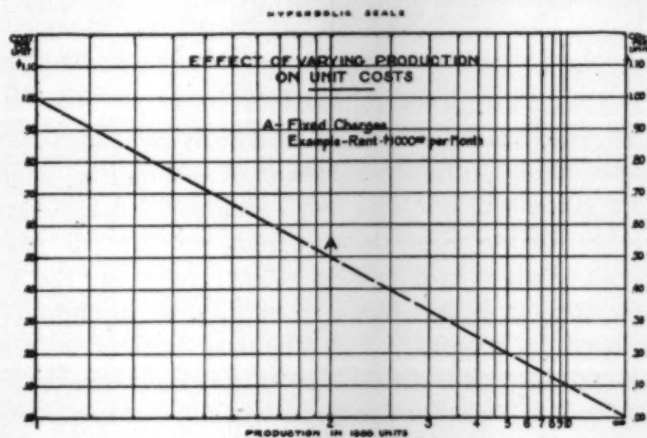
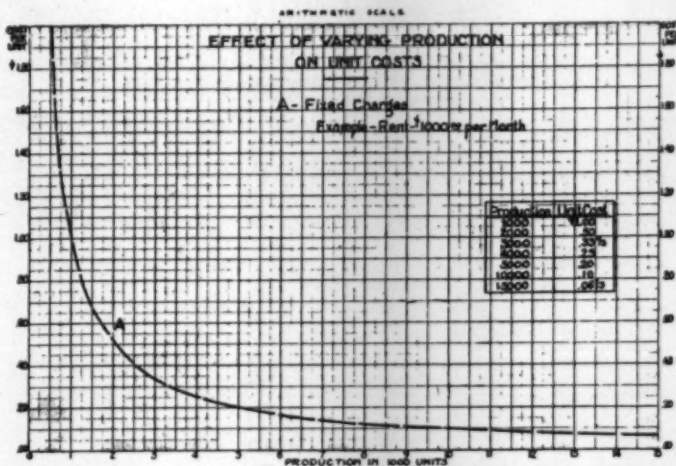


Figure 3

In Figure 4 we have the other extreme case; namely, that of an item which varies directly with production. In this case, the unit cost will be the same regardless of production and will be represented by a straight horizontal line on either ruling.

Figure 5 shows the comparison for an item that is partly variable and partly fixed. This type of item gives a straight line which crosses the right edge of the sheet at a point which represents the cost for the variable item alone, the fixed portion of the item having been reduced to zero by indefinitely increasing production of the goods in question.

It can be seen from the above that any item or combination of items of cost will result in a straight line if plotted against production on hyperbolic paper. The greater the percentage of fixed items, the steeper will be the slope of the line. One point, however, must be borne in mind. The curve

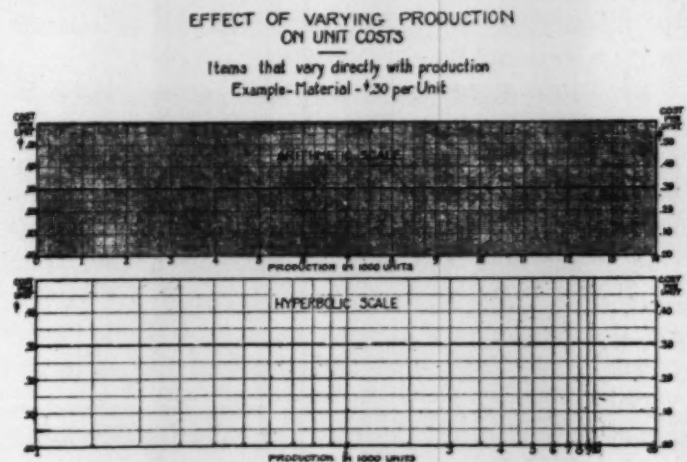


Figure 4

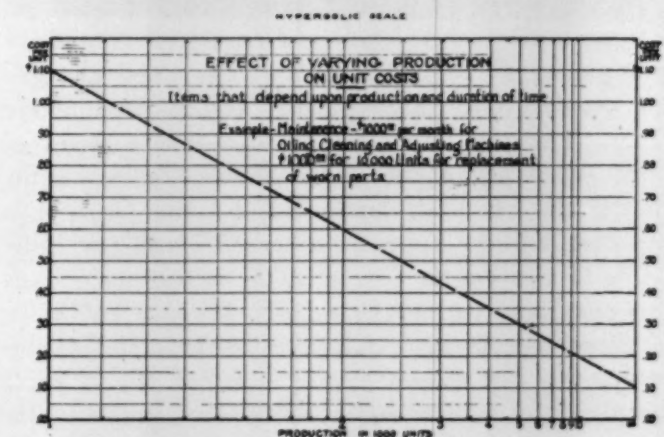
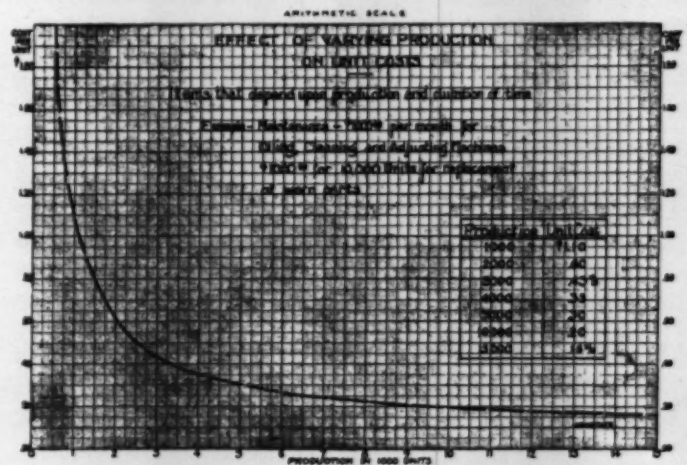


Figure 5

will have significance only up to the capacity of the equipment upon which it is based.

As an example of the use of this method of picturing fluctuations in cost due to fluctuations in production, we have drawn up a simple case to use as an illustration. In order to avoid unnecessary complications and take a familiar subject for discussion, we have chosen the cost of operating an automobile.

In Table 4 we have our basic assumptions to use in this problem. They have been chosen with no particular case in mind and by no scientific means. They are simply intended to illustrate the method, rather than to convey any useful information concerning the cost of running a car. The tabulation gives the cost per year and per month for the fixed charges, such as depreciation, insurance, license fees, etc., and the cost per mile for variable items, such as gasoline, oil, tires, etc. From these figures, the cost per mile for operating is computed for two convenient points for plotting.

TABLE 4

ITEM	COST PER YEAR	COST PER MONTH	COST PER MILE	
			100 Mi. Per Mo.	1000 Mi. Per Mo.
Average Depreciation & Interest on Investment	\$480.00	\$40.00	\$.40	\$.04
Insurance & Auto Club	72.00	6.00	.06	.006
License Fees	18.00	1.50	.015	.002
Garage Rent	120.00	10.00	.10	.010
Tires	—	—	.01	.01
Repairs, Oil, Grease & Incidentals	—	—	.01	.01
Gasoline	—	—	.013	.013
TOTAL			.608	.091

Figure 6 shows these items of cost plotted on a hyperbolic scale. The variable items are added and placed at the bottom, and the fixed charges are divided into three groups and plotted above them. The top line then represents the trend of total operating costs. This shows, for example, that if the car is driven but 200 miles per month the cost will be approximately 33 cents per mile, while if the car is driven 2,000 miles per month the cost will be approximately 7 cents per mile. If these figures were based upon practical experience, the car owner might consider the chart a standard by which to measure performance. He might plot his actual costs on this chart, and if they did not follow the standard it might pay him

to check with his garage man and determine the source of his high cost, if such were the case.

Now let us consider how this method of determining a fluctuating standard cost may be applied to a practical industrial situation. In the first place, it is of use only in a situation where there is a fairly pronounced variation in production and it will be more useful where these fluctuations occur in a more or less systematic or seasonal manner.

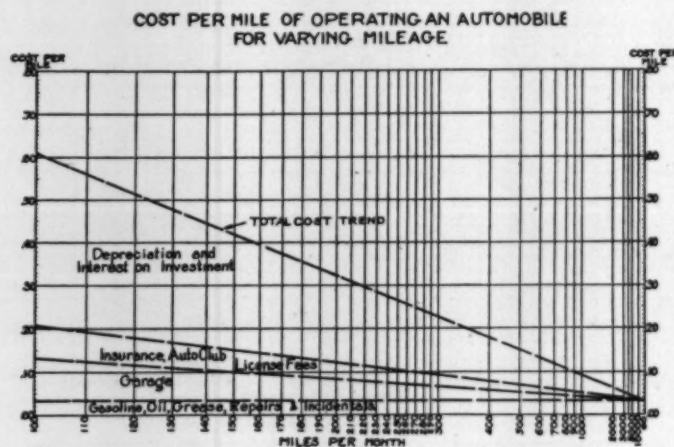


Figure 6

In any business of this kind it is necessary for management to have some sort of estimate of what production will be. The more accurate this estimate is, the better able management will be to plan for it. But, whether it is scientifically arrived at or merely a hunch, some idea of peak production at least is necessary for planning equipment and labor to take care of it. We will assume then that a production estimate has been worked out and plans to meet it have been made.

The next problem is to arrive at proper standards or estimates upon which to base the cost charts. Items of expense can usually be taken from past records. Fixed charges are usually known in advance and can be used without much study. Doubtful items, such as maintenance, may be studied by plotting past costs on hyperbolic paper and estimating trend lines through the points. These lines should be straight and it is here that the usefulness of the special ruling will be especially evident.

In drawing up material cost standards, the cost of the proper amount of material of the proper specification, purchased in the most advantageous way, and allowing only for reasonable waste should be used. Past records are sometimes unreliable due

to changing conditions, excess waste or inefficient handling in the past. Comparison of actual cost with a reasonable standard of this character will act as an incentive for lower material costs in the future. Time studies should be made of the operations involved after correct standard practice has been determined. Reasonable standards should be set up and an organization worked out to handle the estimated peak in production. Also a minimum staff should be determined and the production of the minimum staff computed.

From these facts it is a simple matter to compute the standard cost per unit for two production levels and these points will determine the estimated cost trend. It is advisable to compute the cost of one or two extra points to be used as checks on the assumed trend and to verify results.

From the cost charts the unit cost for the estimated production may be read and a fluctuating budget and average yearly cost estimated. This average cost when compared to the selling price will determine what the profit should be in advance.

To illustrate this method of determining cost standards for fluctuations in production a series of charts and tables have been prepared which show current costs compared with such standards for a period of some seventeen months. The product of the department used for illustration is turned out to meet the special requirements of the customer so that there is no possibility of carrying a stock. Furthermore, this product is subject to pronounced seasonal variation.

These fluctuations, of course, caused wide variations in cost, and the current reports did not give management a correct idea of what was actually happening in this department. The result was a continuous stream of explanations in which nobody could tell the difference between actual facts and excuses for inefficiency. These fluctuations are shown in Figure 7.

As a result of this condition, a thorough investigation was carried on, following the lines already outlined. As a result, a system of fluctuating cost standards was worked out, which will be shown below.

Figure 8 shows the total cost estimate or standard for varying production, together with actual costs attained. The heavy dash line represents the estimated trend. Theoretically, the actual cost per unit for any production should fall on this trend.

The points circled and marked with dates show how the actual costs have compared with these predetermined standards over a period of seventeen months. From this chart it can be seen at a glance whether the cost for a particular month was high or low for the production level attained. When

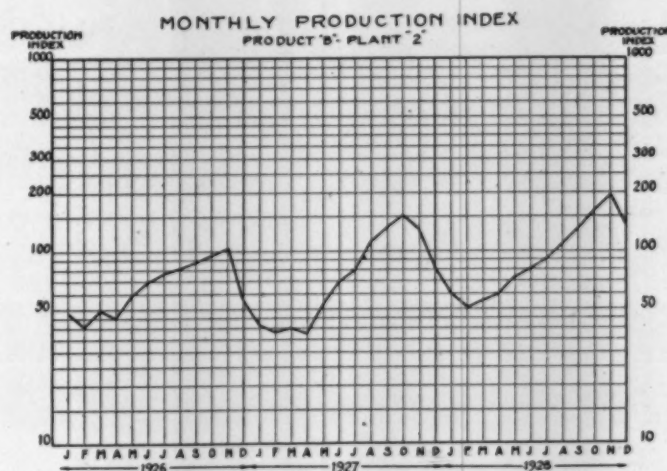


Figure 7

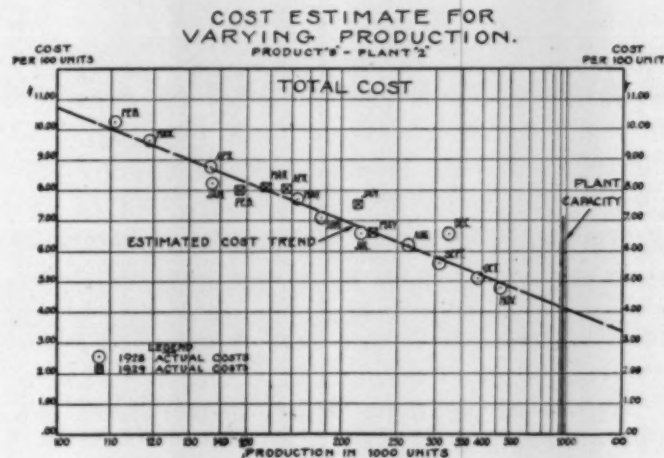


Figure 8

costs are shown in this manner, management can tell immediately whether the department has been well managed or not.

Figure 9 shows the cost for the three major elements, material, labor, and expense, that go to make up the total cost. Each chart shows the estimated trend, together with the actual costs, as in the case of Figure 8. If the cost is high for a particular month, as shown by Figure 8, by tracing back through Figure 9 the elements out of line

can be found and investigated at once to save future unwise expenditure.

Other charts contain similar information for the various expense items in detail so that if the expense chart shows a discrepancy, it can be traced through to the individual item that is out of line and the cause determined.

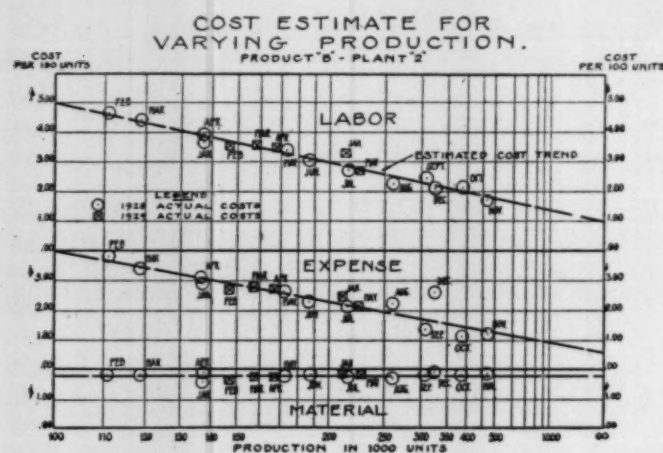


Figure 9

In preparing a standard of this kind, the procedure is, of course, in reverse order to the manner illustrated. The estimates are made for the items first, and then accumulated into the total cost estimate later. The examples cited above are evidence of the value of this method. Out of the seventeen months cited, the cost was materially out of line for but three or four months. Some of these discrepancies may be accounted for by clerical errors and in one case there was an unusually high maintenance bill, so that the number of months which show actual discrepancies are reduced to one or perhaps two.

Production in this department is estimated in advance, as stated above. From these estimates it is a simple matter to prepare a budget and plan in advance. The monthly estimated costs for the estimated production are read from the trend line (Figure 8) and the amount of expenditure computed and accumulated for the year. The total yearly expenditure is then divided by the total yearly production, to give the average unit cost for the year. Table 5 shows such a budget for the department used in the illustration above.

From the above standards and the estimated budget for the year, it is possible to put in the

TABLE 5

BUDGET FOR 1929

MONTH	PRODUCT "B" PRODUCTION	PLANT "2" COST PER 100	AMOUNT
January	225,000	\$6.85	\$15,412.50
February	150,000	8.25	12,375.00
March	145,000	8.45	12,252.50
April	160,000	8.00	12,800.00
May	205,000	7.00	14,350.00
June	220,000	6.90	15,180.00
July	265,000	6.20	16,430.00
August	325,000	5.65	18,362.50
September	450,000	5.00	22,500.00
October	500,000	4.85	24,250.00
November	630,000	4.55	28,665.00
December	400,000	5.20	20,800.00
TOTAL	3,675,000		213,377.50
AVERAGE COST PER 100		\$5.80	

hands of management a monthly cost sheet that will show not only what the product has cost, but how that cost compares with what can reasonably be expected at the production level attained. Also, the production and cost can be compared with the budget to determine whether or not the expected profit is likely to be attained. Such a cost sheet is shown in Table 6.

The first four columns of this sheet give the actual production, total cost, and cost per 100 units by items for the current month and year-to-date. The last three columns show: first, the estimated production for the month, year-to-date and total year; second, the estimated cost by items for the actual production for the month and year-to-date; and third, at the bottom of the last column is shown the estimated cost per 100 units for the year based on the budget.

From this example, it is clear that the production for the month (231,300) is higher than the budget (205,600). The year-to-date production is also higher (924,800 as against 885,000). The cost for the month (\$6.65) is slightly higher than the standard (\$6.62), although not so much so as the year-to-date, which is \$7.60 compared to \$7.38. This indicates a slightly improved condition over previous months. If we trace back through the cost items, we shall find that the principal difference lies in the expense item which is \$2.19 against a standard of \$2.10. This difference is probably not great enough to merit inquiry. The general impression, as created by this sheet, is satisfactory. The department is showing improvement,

TABLE 6
MANUFACTURING COST
PRODUCT "B" PLANT "2"
MAY, 1929

	ACTUAL		ESTIMATE		Total Year
	Month	Year to Date	Month	Year to Date	
Production	231,300	924,800	205,600	885,000	3,675,000
Cost Items	TOTAL COST		ESTIMATED COST AT ACTUAL PROD.		
Material	\$4,096.86	\$16,547.01	\$1.77	\$1.79	\$1.80
Labor	6,218.97	30,101.27	2.69	3.25	2.72
Expense	5,062.47	23,674.57	2.19	2.56	2.10
TOTAL COST	\$15,378.30	\$70,322.85	\$6.65	\$7.60	\$6.62
					\$7.38
					\$5.80

and it is evident that if conditions remain favorable, we shall meet our production and cost estimates for the year. As time passes, and we come nearer to the goal set for the year, this cost sheet will become more and more interesting to all parties concerned.

These cost standards have had far reaching effects in this department. Meeting the standard cost under all conditions has become more or less of a game of Supervision. The result has been substantial savings due to efficient management. Also, the accounting department has improved its methods so that costs are more accurate because every discrepancy is very apt to be investigated.

Reasonable cost standards that are flexible enough to apply under all ordinary conditions of manufacture are an especially useful tool to management. From them, fluctuating budgets may be set up, and estimated advance statements of profit and loss may be calculated; the amount of business necessary to break even may be calculated; and the true effect of increasing volume may be worked out and used as a basis for making price concessions for large orders. A better knowledge of the probable average cost of a commodity can

be made available, so that correct selling prices may be worked out before either the business is lost to a competitor or a loss is suffered due to too low selling prices.

Aside from these general policy uses, a good standard cost is an excellent incentive for efficient management. If all parties are convinced that the standard is reasonable, and that it takes actual conditions into consideration, they will strive to make a good showing by meeting it. This result will well pay the cost of carrying on the work.

The method that we have outlined is not a cure-all. It works in the particular case of varying production and its usefulness stops there. But, there are many industries that have the seasonal problem, and for these industries this method should be useful.

We believe, however, that any cost problem may be satisfactorily solved if it is carefully analyzed and studied by the methods of industrial engineering and business research. If the actual conditions of manufacture are studied, certainly the cost of operation can be standardized to the point where the facts can be stated in a clear and understandable manner that will not conceal any facts.

ANNUAL MEETING OF THE TAYLOR SOCIETY

DECEMBER 4-6, 1929

Outline of tentative program for this meeting will be found on pages 158-159.

The Central Institute of Labor

A Russian Contribution to the Sciences of Work and Workers' Education

By V. MOURAVIEFF

Scientific Secretary of the Central Institute of Labor, Moscow

IN THE June 1919 issue of the Bulletin was published "What Lenine Said About the Taylor System," an abstract in the form of quotations from an article by Nikolai Lenine in "Prouda" of April 28, 1918. The principal point of the quoted part of Lenine's message to the new government was that Russia "should try out every scientific and progressive suggestion of the Taylor System."

In the October 1922 issue of the Bulletin appeared "Russian Scientists in Quest of American Efficiency," by S. Slonin, of the American Relief Administration and formerly editor of "Russian-American Journal of Commerce." This article described in a general way the new Central Institute of Labor, of which the object was generally "to implant into the character of the peoples of Eastern Europe and Siberia, the searching, daring, persisting American energy," and specifically to serve, through research and education, as the standard-bearer of a new culture of industrial efficiency in Russia.

We are pleased to be able to present, ten years after Lenine's declaration in "Pravda," from the pen of its distinguished scientific secretary, a complete and authoritative account of the purpose, organization and accomplishments of the Central Institute of Labor. It is evident that the Institute has not been neglectful of the significance of the word "scientific" in the combination "Scientific Management." (The Editor)

Its Aims

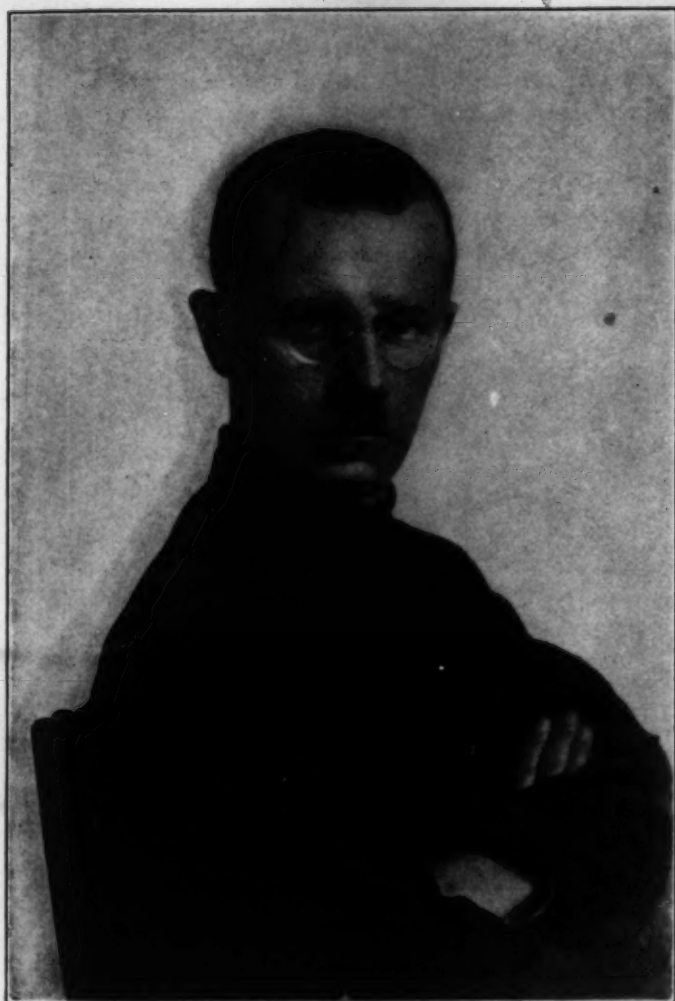
THE Central Institute of Labor in Moscow was organized in 1920 by the Central Council of Trade Unions, with the two main objects of scientific research and vocational training. These are closely related; the scientific study of work helps to develop new and efficient methods of professional education and the practice of training furnishes the Institute with material for its scientific investigations. The students in the Institute's courses are not only taught but are used as subjects for study and experiment.

The aims of the Institute have been formulated in the following way in official proclamations.

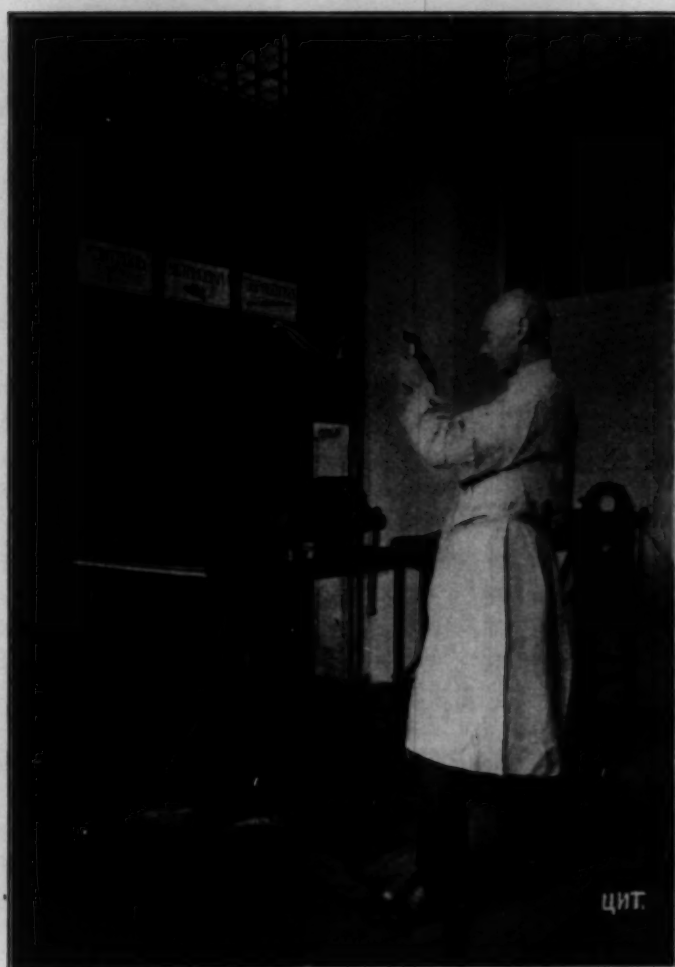
1. To help workmen to master the methods of industry.
2. To further the growth and development of skilled work.
3. To create an organization of production that can not only guarantee the interests of industry but also educate and regenerate the workers employed and develop in them a spirit of creative initiative.

The Central Institute of Labor regards all the problems of the organization of work and industry from the standpoint of the gradual accumulation of improved working habits. Its aims differ from those of the American and European movements for the betterment of the human factor in industry. While in America and Europe the object of new methods is generally to improve the performance of workers in the narrow field of their specialty, the Central Institute considers that organization at the working bench is the prototype of every type of further organization and of the organization of the whole enterprise. The work of the skilled workman contains in embryo all the elements which, when developed and enlarged, make up the activity of the whole industrial organization. Thus, the work at a lathe is analogous to the work of a whole plant. It covers the fields of supplies (material); power (the motor); speed (gears, driving pulleys, change wheels); balance (centers, spindles); instruments (tapers, tools, stamps); calculation (the stroke counter and recorder of feeding); control (measurement of output), and management (handles and supports). The workman, therefore, can be called the director of his working bench. And the enlargement of his horizon opens up to him the way to management in its widest sense.

The Institute's activities along the lines of scientific research, of education and of the organization



The Director of the Institute, Alexei Kapitonovitch Gasteff



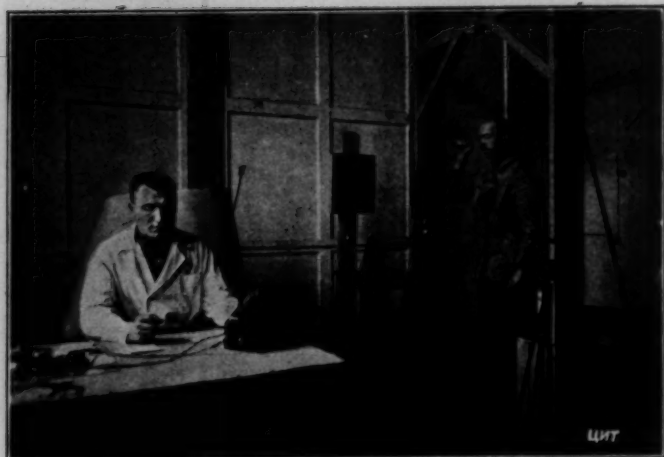
The Bio-Engineering Laboratory



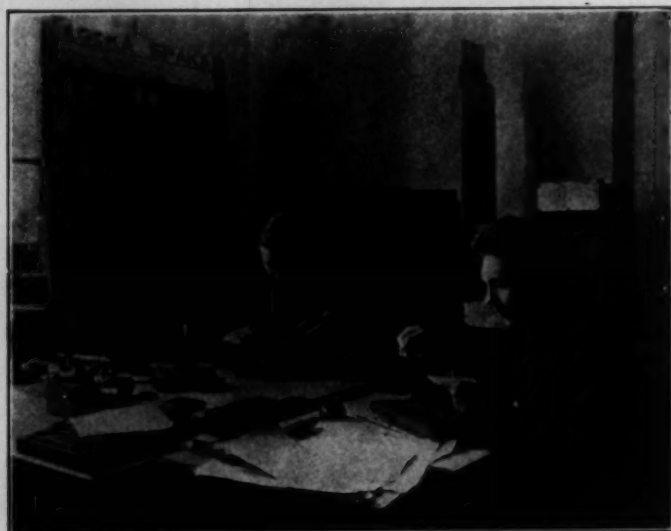
The Institute Building



The Institute's Hall



Investigation of Work in the Bio-Engineering Laboratory



Laboratory of Production Control



The Bio-Chemical Laboratory
(Examining the Blood of Students)



Training Mechanics (Filing)

of labor insure the execution of its program. The following provisions are included in its statutes.

1. It is the central organ of the Trade Unions for investigating the problems of the organization of work.

2. It studies the different forms of the modern organization of work and develops methods and systems for its rationalization as well as new methods of industrial training.

3. It studies these problems by the methods of analysis; that is, by experiments in laboratories, clinical observations and production practice.

4. It is at the same time an educational institution which organizes different courses for the development of systematic workers in the field of management—administrators, technical employes, controllers, instructors and skilled workers.

5. It assumes the functions of investigation and of consultation on problems of organization and training for specific enterprises and draws up plans for separate jobs or for the whole enterprise as the case may require.

6. It acts as a consultant and expert in respect to the work of state institutions, co-operatives and trade unions.

7. It works out plans for the improvement of industrial education in state and trade union establishments.

8. It organizes experimental and model workshops where its methods are tried out and new accomplishments in the fields of production, management and industrial training are demonstrated.

Its Methods

The method of the Institute has been applied in the following branches of industry and in the professions.

1. The metal industry—mechanics, turners, smiths, boiler makers, foundry workers, frazers, fitters.

2. The textile industry—fly frame tenters, ring frame tenters, drawers, weavers, skeiners.

3. The building trades—bricklayers, concrete mixers, building carpenters.

4. The wood working industries—carpenters, pattern makers.

Besides the work in the industries, the field of professional instruction has been studied and practical courses worked out for training teachers and workshop instructors.

The methods of the Institute are based on (1) its work of research, (2) the control of the training of skilled workmen, and (3) the analysis of the data obtained from this control.

In its analysis of the work of the professions and the working out of programs for them the following course has been followed.

1. Conditions are first organized for the study. Literary material on past experience is accumulated, studied, systematized and the data verified.

2. An analytical scheme is settled upon for determining the movements, operations, combinations of operations, the special abilities, the necessary equipment, working places, tools and the necessary materials that are required.

3. The qualifications of the profession or job are formulated. The biological characteristics of the job are first studied; these are then evaluated in their relation to efficiency, and finally a list of the qualities which will insure the attainment of the greatest efficiency is made up.

4. On the basis of this list of qualities a system of instruction is worked out which includes a plan, a program of operation and the necessary instruction sheets. Instruction is given in workshop practices, proper motions, and in theoretical questions of industrial training.

5. A system of control, which also includes a plan, a program of operation and instruction sheets, is likewise worked out. Conditions under which candidates will be accepted for courses are decided upon and methods of selection of candidates worked out. The development of skill is tested by comparison with the quality of production, by evidences of improvement in capacities and by examinations at the end of the courses given.

6. Analysis of the data of control is made in accordance with the clinical method. It is so called because it has been developed along lines analogous to those in use in modern clinics.

Its Direction and Organization

The organization of the Institute is functional. A Director, named by the Presidency of the Central Council of the Trade Unions, is at its head. The present director is Alexei Kapitonovitch Gasteff, its founder and the person responsible for working out the methods which it follows.

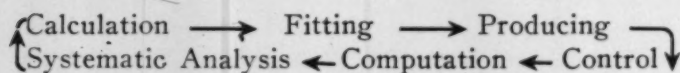
Under the Director is the Council of the Institute made up of representatives of the trade unions.

The council is responsible for the general direction of the Institute.

Five men make up the Presidency of the Institute. These men are its administrators, direct its planning and methodology and control the work of its sections.

The structure of the Institute is based upon a system in which practice and method are closely related. The methods employed are corrected by practice and at the same time the practical activity of the Institute supplies the work in methodology with the necessary experience. In this respect the Institute has followed the example of modern machine industry.

In modern machine industry the work of an enterprise must first be calculated and must "fit" in a way which foresees all the details of future work. Then comes the producing process itself. Lastly, this process is controlled and its results verified. The data of control must then in their turn be analyzed and systematically studied. The facts that are thus gathered are then used in calculations and the process is back at the starting point. The organization of an enterprise takes the following form:



The general formula of this scheme can be expressed in three words—"fitting," performing, controlling.

The Central Institute of Labor follows this model of an industrial enterprise. *It is an enterprise for the production of skilled labor.* A machine works satisfactorily only when it is "fitted" in the right way. With men it is the same thing. A man's movements depend on how his body and nerves are set, and this "fitting" determines his working ability. All the elements which have been mentioned are therefore needed in training. Control and verification are particularly needed. The organization of the Institute corresponds to these functions. The "Fitting" Division performs the

work of ordering, "fitting" and disposing the whole working organism. The work of training is done through the courses. The Division of Control fulfills the function of control and the work of systematization is carried on by the secretariat.

There are two other divisions besides these. One controls the introduction of Institute methods into schools connected with factories. The second is the Division for the Direction of the Local Sections of the Institute in provincial towns.

The Fitting Division

The Fitting Division has for its main object the analysis of different professions, the construction of programs of training for skilled labor and the adapting of workmen to the work in factories, according to the methods of the Institute, and the formulation of the necessary instructions. The Fitting Division is made up of the analytical methodology bureau which analyzes divers industries, improves training programs and makes up programs, and the bureau of documentation which writes up systems, plans and programs and instruction sheets for the student, the instructor and the controller. This bureau is also responsible for drawings and designs and supplies the other divisions and sections with standards, calculation sheets, diagrams, tables, graphs, placards and bulletins.

Training Courses

The training of workmen is accomplished by means of special courses called "Courses A." Such courses are maintained in the seven training sections of the Institute. Two are in Moscow, one in Leningrad, one in Kharkov, one in Dnepropetrovsk, one in Bryansk, and one in Minsk. Special courses for training textile workers have been organized in Ivanovo-Voznesensk and Vichouga. Besides these Courses A, which train skilled workers, another series called "Courses B" has been instituted for training workshop teachers and instructors. The principal aim of these is to prepare factory school teachers for the primary and secondary periods of instruction.

The teaching of Courses B consists for the most part of laboratory and workshop practice which develops the necessary knowledge for industrial teachers. The theoretical subjects in the program

¹The words "fit," "fitting," are used in translation of the Russian word "outstanovka," and the German word "einstellung." These convey the idea of an arrangement of parts, details, mechanisms and organs which predetermine the working process which they perform. The verb "to fit," meaning to prepare, to set into a desired position, seems to be particularly suitable.

are of an auxiliary character and explain the methods of acquiring teaching ability.

Control

The best planning and producing practice does not attain its end without a system of control. The Institute has therefore set up a Division of Control, which observes and studies all the elements of instruction used in the courses. The student or apprentice remains under the observation of this division from his entrance into the school until his enlistment in the factory.

The first method of control is biological. This is effected through the Selection Committee which selects the young men for the courses. Special provisions regulate this committee and order its work. They cover the constitution of the committee, the organization of its observations, the enumeration of the elements observed, the basis of selection and the forms and order of documentation of the selection process.

The Ambulatory examines the candidates for courses from the medical standpoint, controls the health of the students during the period of instruction and analyzes the data collected as a result of medical registration.

The Laboratory of Functional Diagnosis takes part in the selection of students, examines their hearts and lungs, formulates standards and norms of selection and studies new methods for studying the workings of the heart and lungs.

The Laboratory of Respiratory Exchange analyzes the energetic balance of working organisms and studies ways and means of making such analyses.

The Bio-Chemical Laboratory takes part in the selection of candidates for the courses by studying the composition of their blood. It controls the degree of fatigue during work and studies the action of different chemical compounds on the organism during muscular and intellectual work, with the object of developing a therapy of fatigue.

The Psychotechnical Laboratory takes part in selection by studying the higher nervous functions of the organism. It controls the activity of these functions during the period of instruction and studies their effect upon the development of professional ability.

The Bio-Engineering Laboratory controls the behavior of the students from the point of view of

organization and efficiency. It studies the distribution of the student's time during the working process, and calculates how much time he uses for fitting, producing and controlling. The laboratory uses special controlling apparatus which registers by means of electrical counters the duration of the fitting, producing and controlling activities.

The Laboratory of Production Control controls the materials used in the training process, verifies the precision of the work performed in a given operation, and controls the time used for the work. This Laboratory is also responsible for sorting and rejecting finished products and for determining causes for defective quality. Every student is studied during the whole period of his course from the standpoint of the results of his work, its speed and precision. At the end of his course a curve is drawn showing his progress.

The general functions of control of production in all the workshops is (1) to verify the results of the work done by the students, (2) to evaluate the skill of the workers trained in technical and other requirements, and (3) to establish the defects in the products made by the students to the end that these may be removed.

The Bureau of Clinical Analysis collates and examines the data collected from observations along all three of these lines—biological, technical and organizational. This bureau has four sections. The technical section collates the data resulting from the control of production in all the shops. The biological section studies the connection between the technical and biological characteristics of the apprentices. The statistical section collects data concerning the results of training at the Institute and in the factory schools. The section of contact maintains contact with the workers after they have finished the courses and helps them to improve their work after they are placed in industrial enterprises.

Control as an Instrument of Improvement

In the Central Institute of Labor control is transformed into an instrument of improvement. The work of the Institute starts with the idea that the work of a scientifically organized industrial enterprise, particularly under mass production, needs an accurate and minute organization of control. The controlling division of a modern industrial enterprise fulfills the function of an industrial clinic.

In it, as in a looking glass, are reflected all the defects and diseases of production. Through the systematizing of controlling data and organization for sorting products, divisions of control are transformed into laboratories which urge the enterprise to continual reconstruction and improvement.

In the same way the organs of control in the Central Institute fulfill the functions of scientific research and investigation. By studying the behavior of the student while working they discover the losses inherent in each individual case of production. By studying progress in speed and precision in the work of each student, by sorting the products which he fabricates and ascertaining the causes of defects, the organs of control create a scientific base for the valuation and qualification of labor.

A further enlargement of the problem leads to distinctions between divers types of modern workers and a description of their characteristics.

Evaluation of Qualities

The evaluation of qualities attained through the courses is effected through a Committee of Experts. This committee is formed by representatives from the enterprise which requires qualified workmen and by representatives of the trade union. The Central Institute of Labor sits with the committee in a consulting capacity. It has worked out technical norms for the use of the committee and has worked up a list of characteristics of qualified work according to specialties.

The Secretariat

The secretary of the Institute formulates the plan of work, controls its execution, supplies the divisions with work and gives form to its investigations. The secretariat is made up of the Section of Planning and Inspection and the Scientific Secretary, whose principal duty is to study foreign books, periodicals and other material and to correspond with foreign institutions and enterprises. The library of the Institute consists of some twelve hundred Russian and foreign books on the subjects of labor, education and the organization of industry. It receives many Russian and foreign journals—American, English, German and French. All the material on methodology is collected and classified in the archives of the Institute. Models of the work of the Institute, training apparatus and samples of the students' work are displayed in the museum.

The Institute also edits two bulletins—"The Organization of Work" and "The Formation of Labor," one a bulletin for the courses and the other a bulletin for the periodic conferences of factory schools.

Instruction in Factory Schools

While it was investigating the problems of training and forming skilled laborers, the Central Institute naturally was confronted with the question of factory schools. It became convinced very early of the necessity of transforming the existing factory schools into a source of regenerated skilled labor and of instilling into them new training methods.

The Institute exerts its influence in this direction through a special Division of Instruction in Factory Schools. This division inspects the schools with regard to the possibility of introducing the Institute's methods into them. Special courses, already described, prepare instructors and inspectors for these schools. At present most of the schools are bound by instructions from their head organizations to replace the old methods with these new ones.

Results of Training Courses

On the first of January, 1928, the number of skilled workmen trained at the Institute was 4,849, the number of instructors 1,094—a total of 5,943.

The young men who finish the courses are generally placed in factories through the Labor Exchange. No less than 60 per cent, and in some towns 100 per cent, of them immediately find work in factories. The average earnings of these workers are about eighty rubles a month (\$40.00) in Moscow, and about seventy rubles in Leningrad.

At the beginning the Institute centered its attention upon problems in the metallurgical industry. It did this because in this industry it found the greatest diversity of working methods. The metal industry was the cradle of the science of management. Taylor based his great work on experiments in the metal industry.

The methods worked out have been applied in the other industries mentioned. In the building trades, for example, the Institute has organized courses in five of its sections. But the application of the Institute's methods has acquired particular significance in the textile industry. Its investiga-

(Continued on page 186)

A Method of Measuring and Rating Management

An Analysis of the Various Phases of Management Resulting in the Setting of Standards for Comparison with Performance

By **GEORGE G. BERGER**

Consulting Industrial Engineer, New York

THE following method of rating management is an analysis of the operating viewpoint with regard to the chief policies of operation, such as the maximum utilization of money, labor, materials, time, production factors, etc., in order to determine the goals or standards of managerial effort. The actual operating results may be compared with these standards to indicate the efficiency of the organization.

An important measurement required for the ratings is the production value of the maximum capacity of the plant. This value is determined from the time studies of the various operations and an investigation of the capacity of the equipment and its balance of manual operation hours. In the case of a plant manufacturing a standard line of products, sales records over a period of five or ten years would indicate the weightings for each product in computing this production value of maximum capacity. In the case of a plant with a varying line of products (printing and stamping industries), or with uncertain sales (transportation, power, or heat service), the value of the maximum capacity may be taken in ratio to past production by comparing the maximum operation hours with the past operating hours.

The measurements of maximum operating time and value of production indicate the necessity of ratings on the basis of time and value comparisons as determined by the operating policy of the department or phase considered. For example, in the production phase the efficiency of the utilization of labor may be measured in terms of hours or money, while in measuring the efficiency of the utilization of the overhead factors (rent, power, insurance, depreciation, etc.,) the ratings can be made only on the basis of value.

In this method of rating, there are five chief phases: sales, purchasing, production, general management (including financial control), and devel-

opment. With the exception of development, all ratings in each phase are given in terms of percentage efficiency. In the case of the development phase, the ratings are given in terms of percentage increase since there can be no standards set for the growth or development work.

Securing the data required for these ratings has indicated the necessity of deciding on the representative period in order to secure ratings representative of the character of the management. In most instances, management ratings for the past fiscal year or for the year ending with the start of the investigation are representative. It may be necessary, however, to secure ratings over a longer period, in which case data should be collected for the period measured. This method of rating is quite adaptable to any period.

The writer does not claim that the following classifications of policies can be used without change in every case. However, the investigation which the plan requires would point out those policies in individual cases which should be included in the final ratings.

The ratings are of particular importance to the large organization because of the standards set for related phases of operation. It is impossible to maintain high ratings for each phase in industrial operations, but the efforts of the management to achieve the standards of operation for high ratings is an important factor in developing the organization to a high degree.

Ratings in Sales Phase

Policies:

1. Secure orders for the maximum capacity of the plant.
2. Secure orders to allow for uniform production.
3. Secure good accounts.
4. Protect the concern against losses.

1. The general efficiency¹ of the sales department in securing orders for maximum capacity of the plant equals:

$$\frac{\text{Sales}}{\text{Maximum production at sales value}}$$

2. Efficiency of co-ordination with the production schedule equals:

$$100 \text{ per cent minus } \frac{\text{Average weekly deviation of sales from weekly capacity of plant for period}}{\text{Weekly capacity at sales prices}}$$

3. Efficiency in securing accounts paying according to terms equals: (5 year average)

$$\frac{\text{Payments on time (gross)}}{\text{Sales for period}}$$

4. Credit efficiency equals:

$$100 \text{ per cent minus } \frac{\text{Bad debts}}{\text{Sales}}$$

Ratings in the Purchasing Phase

Policies:

1. Secure materials at the lowest prices.
2. Secure materials on time for uninterrupted production.
3. Secure materials in accordance with specifications.
4. Purchase to safeguard stocks against a decline of inventory value.

1. General efficiency of purchasing equals:

$$100 \text{ per cent minus } \frac{\text{Cost of purchases — Cost at lowest market prices}}{\text{Cost at lowest market prices}}$$

2. Efficiency of co-ordination with the production department equals:

$$100 \text{ per cent minus } \frac{\text{Number of stoppages due to lack of materials}}{\text{Number of manufacturing orders}}$$

¹Since the maximum capacity of the plant represents 100 per cent sales, amounts over this are credited to the development phase as shown in the example:

Rating computed	108 per cent
General efficiency	100 per cent
Increase in sales (growth)	8 per cent

3. Efficiency in securing proper materials equals:

$$100 \text{ per cent minus } \frac{\text{Cost of materials in spoiled production due to defective raw materials}}{\text{Cost of Materials}}$$

4. Efficiency of investment in inventories equals:

$$100 \text{ per cent minus } \frac{\text{Cost of inventory plus charges}^* - \text{Cost at lowest market prices}}{\text{Cost of inventory plus charges}}$$

Ratings in the Production Phase

Policies:

1. Utilize a maximum of direct labor.
2. Utilize a maximum of materials.
3. Utilize a maximum of overhead factors (indirect labor expense, power, rent, insurance, depreciation, etc.)
4. Maintain quality of product.
5. Make deliveries of orders on schedule.

1. Operating time efficiency of plant equals:

$$\frac{\text{Number of operating hours for period}}{\text{Number of operating hours required for maximum production}}$$

Efficiency of labor utilization (with respect to value) equals:

$$\frac{\text{Payroll for maximum production}}{\text{Maximum production}} \quad \text{Payroll / Production}$$

2. Efficiency of processing materials (with respect to time) equals:

$$\frac{\text{Cost of materials in production output}}{\text{Cost of materials in maximum production output}}$$

Efficiency of material utilization (with respect to value) equals:

$$100 \text{ per cent minus } \frac{\text{Cost of materials spoiled in production plus cost of materials wasted in production}}{\text{Cost of materials in production}}$$

3. Efficiency of utilization of indirect labor (with respect to value only) equals:

^{*}Charges=storage charges and loan interest rate on investment.

$$\frac{\text{Estimated indirect labor} / \text{Maximum production}}{\text{Indirect labor} / \text{Production}}$$

Efficiency of rent utilization equals:

$$\frac{\text{Rent} / \text{Value of maximum production}}{\text{Rent} / \text{Value of production}}$$

Efficiency of power charges utilization equals:

$$\frac{\text{Estimated power charges} / \text{Value of maximum production}}{\text{Power charges} / \text{Value of production}}$$

Efficiency of insurance charges utilization equals:

$$\frac{\text{Estimated Insurance} / \text{Value of maximum production}}{\text{Insurance} / \text{Value of production}}$$

Efficiency of depreciation expense utilization equals:

$$\frac{\text{Depreciation} / \text{Value of maximum production}}{\text{Depreciation}^* / \text{Value of production}}$$

Efficiency of utilization of other expenses equals:

$$\frac{\text{Estimated other expenses} / \text{Value of maximum production}}{\text{Other expenses} / \text{Value of production}}$$

4. Efficiency of maintenance of quality equals:

$$100 \text{ per cent minus } \frac{\text{Sales returns because of defects}}{\text{Sales for period}}$$

5. Efficiency of making deliveries according to schedule equals:

$$\frac{\text{Number of orders shipped on time}}{\text{Number of orders for period}}$$

Ratings in General Management

Including Finance

Policies:

1. Provide stability by standardized results of operation:

- Standardized raw material inventories.
- Standardized finished goods inventories.
- Standardized labor cost according to budget.

*Depreciation is estimated according to operating hours of equipment.

d. Standardized material cost according to budget.

e. Standardized overhead costs according to budget.

f. Standardized net profits according to budget.

2. Provide financial arrangements for contingent expenses:

a. Efficiency of cash position to meet current expenditures.

b. Efficiency of net profits in providing for return on investment and loans, and in providing for funded debt.

1. Measurement of stability:

a. Efficiency of stability of raw material inventories equals: (5 year average)⁴

$$100 \text{ per cent minus } \frac{\text{Average monthly deviations of inventory from average of period}}{\text{Average inventory for period}}$$

b. Efficiency of stability of finished goods inventories equals:⁴

$$100 \text{ per cent minus } \frac{\text{Average monthly deviations from working inventory}}{\text{Working Inventory}}$$

c. Efficiency of stability of labor costs, equals:

$$100 \text{ per cent minus } \frac{\text{Average percentage deviation from budgeted monthly labor costs}}{\text{Average percentage deviation from budgeted monthly labor costs}}$$

d. Efficiency of stability of material costs equals:

$$100 \text{ per cent minus } \frac{\text{Average percentage deviation from budgeted monthly material costs}}{\text{Average percentage deviation from budgeted monthly material costs}}$$

e. Efficiency of stability of overhead factors equals:

$$100 \text{ per cent minus } \frac{\text{Average percentage deviation from budgeted monthly overhead costs}}{\text{Average percentage deviation from budgeted monthly overhead costs}}$$

f. Efficiency of the stability of net profits equals:

$$100 \text{ per cent minus } \frac{\text{Average percentage deviation from budgeted net profits}}{\text{Average percentage deviation from budgeted net profits}}$$

⁴In the case of ratings a and b, the policy for maintaining inventories is taken as the average of five years' operation. Most concerns do not set a policy for maintaining stocks according to fixed values, but compare such values in the balance sheets from month to month.

2. Measuring financial arrangements:
a. Efficiency of cash position equals:

$$\frac{\text{Cash (undivided profits in separate account) plus } K^* \text{ times accounts receivable}}{\text{Accounts payable}}$$

- b. Efficiency of net profits in providing for return on investments, loans and funded debt equals:

$$\frac{\text{Accumulated net profits}}{\text{Accumulated financial interest rate charges (for investments and loans) plus funded debt due}}$$

Ratings in Development

Percentage Growth

Policies:

1. Increase sales.
2. Increase net profits (see 5).
3. Increase the value of maximum production due to additional equipment (sales phase policy 1).
4. Increase the value of maximum production due to improvement of output or the development of new products or by-products (additional equipment included).
5. Reduce the costs of manufacturing (labor, materials and overhead).

The proper value of good-will is determined by the probable net profits effected by the above policies.

1. Increase in sales equals: (measured in percentage growth)

$$\frac{\text{Sales—Sales for previous year}}{\text{Sales for previous year}}$$

2. Increase in net profits equals: (measured in percentage growth)

$$\frac{\text{Net profits—Net profits for previous year}}{\text{Net profits for previous year}}$$

3. Increase in value of maximum production at sales values due to additional equipment equals: (measured in percentage growth)*

*K represents the percentage loaned on accounts receivable by loaning companies.

*The above rating should equal increased percentage of sales to maximum production at sales value (100 per cent) measured in the Sales Ratings.

$$\frac{\text{Maximum production (old and additional equipment)—Maximum production (old equipment)}}{\text{Maximum production (old equipment)}}$$

4. Increase in value of maximum production (with additional equipment added) due to improvement of products or the development of new products or by-products equals: (measured in percentage growth)

$$\frac{\text{Value of maximum production (with developed products)—Maximum production value}}{\text{Value of maximum production}}$$

5. Reduction in costs of manufacturing measured in terms of probable percentage increase in net profits equals:

$$\frac{\text{Probable net profits (with reduced costs)}^* - \text{Net profits / for previous period}}{\text{Net profits / for previous period}}$$

From the foregoing values and data required, it is evident that the ratings proposed require the following principles of modern industrial organization:

1. Scientific organization and careful control over production.
2. Complete cost data and accounting control.
3. Standardized production methods incorporated in time study data covering the chief operations of production.
4. Standardized policies for financial control incorporated in the budget.
5. Foremanship training to extend the management to the scene of actual production and secure the data and control over those details which vitally affect operation results.

It may be noted, accordingly, that the suggested method of rating covers all phases of modern management methods and is a continuation of the principles of scientific control which this society is endeavoring to infuse into industry.

Data Required for the Ratings

1. Capital stock issued.
2. Bonds issued.
3. Weekly sales for the period.

*Based on investigation of savings in materials, labor, and overhead charges.

4. Credits issued for defective products.
5. Number of orders received.
6. Number of orders shipped according to schedule.
7. Maximum production at sales value.
8. Number of stoppages in plant due to lack of materials.
9. Number of operating hours for period.
10. Number of operation hours required for maximum production.
11. Number of manufacturing orders issued for production.
12. Collections according to terms.
13. Bad debts for the period.
14. Cost of purchases at lowest market prices.
15. Purchases of raw materials for the period.
16. Inventory of raw materials (by month).
17. Inventory of finished goods (by month).
18. Overhead charges on storage department.
19. Cost of materials wasted in production.
20. Cost of materials in spoiled production due to defective raw materials.
21. Cost of materials in maximum production.
22. Cost of materials in production.
23. Cost of direct labor for production.
24. Cost of direct labor for maximum production.
25. Indirect labor charges.
26. Cost of overhead in sales (by month).
27. Indirect labor charges, maximum production.
28. Rent charges.
29. Power charges.
30. Power charges for maximum production.
31. Insurance charges.
32. Insurance charges for maximum production.
33. Depreciation charges.
34. Other charges.
35. Cost of direct labor in sales (by month).
36. Cost of raw materials in sales (by month).
37. Profit and Loss statement by month for the period.
38. Budget for varying sales for period rated.
39. Net profits by month for the period.
40. Accumulated net profits (by month).
41. Dividends declared (by month).
42. Surplus (by month).
43. Budget for varying sales according to latest operation data.
44. Accounts payable (by month).
45. Accounts receivable (by month).
46. Cash on hand (by month).

An Illustrative Case

The following is a case of the application of the foregoing formulæ to the accounts of a fictitious company. Space limitations prevent our giving here the detailed computations involved in these ratings. The complete set of figures is, however, on file in the Taylor Society office and may be consulted by those interested in further study.

Policy	Sales Phase	Rating
1. Securing orders for maximum capacity of plant		72.80 per cent
	\$465,685.35 (Sales for period)	
	\$625,980.00 (Sales value of capacity)	
2. Securing materials on time for orders with the production schedule		75.75 per cent
	\$9,130.74 (Weekly sales)	
	\$12,038.08 (Standard)	
3. Securing accounts paying in accordance with terms of 2 per cent 10 days; net 30		74.50 per cent
	\$336,285.90 (Collections according to terms)	
	\$465,685.35 (Sales or standard)	
4. Credit efficiency		99.02 per cent
	\$4,606.21 (Bad debts)	
	\$465,685.35 (Sales)	

Purchasing Phase

1. Securing materials at lowest market prices		94.60 per cent
	\$13,530.41 (Overpaid)	
	\$250,522.28 (Purchases or standard)	
2. Securing materials on time for uninterrupted production		84.03 per cent

<i>Policy</i>	<i>Rating</i>	<i>Policy</i>	<i>Rating</i>
59 Manufacturing orders held up because of lack of materials		5. Indirect labor utilization	96.30 per cent
<u>369 Manufacturing orders</u>		<u>3.22 per cent (Standard)</u>	
		3.35 per cent (Indirect labor / production)	
3. Securing materials in accordance with specifications	98.17 per cent	6. Rent charges utilization	86.00 per cent
<u>\$214,392.32 (Cost of materials in net sales)</u>		<u>1.001 per cent (Standard)</u>	
<u>\$218,378.90 (Standard)</u>		1.17 per cent (Rent/production)	
4. Investment efficiency	73.40 per cent	7. Power charges utilization	98.80 per cent
<u>\$7,427.30 (Loss on investment in inventory)</u>		<u>.343 per cent (Standard)</u>	
<u>\$27,984.54 (Standard)</u>		.3475 per cent (Power charges / production)	
Production Phase		8. Insurance charges utilization	85.40 per cent
1. Operating time of plant	78.15 per cent	<u>.397 per cent (Standard)</u>	
<u>382,520 hours</u>		.465 per cent (Insurance charges / production)	
<u>489,660 hours capacity of plant</u>		9. Depreciation charges utilization	85.40 per cent
2. Utilization of labor	93.90 per cent	<u>1.975 per cent (Standard)</u>	
<u>29.75 per cent (Standard)</u>		2.31 per cent (Depreciation / production)	
<u>31.68 per cent (Direct labor / production)</u>		10. Utilization of other charges	89.10 per cent
3. Processing materials through plant	89.50 per cent	<u>3.25 per cent (Standard)</u>	
<u>\$241,321.68 (Cost of materials used in production)</u>		3.64 per cent (Other charges/ production)	
<u>\$269,420.40 (Cost of materials required for maximum production)</u>		11. Maintaining production standards of quality	97.88 per cent
4. Utilization of materials	95.65 per cent	<u>\$9,866.25 (Cost of spoiled production)</u>	
<u>\$9,739.18 (Cost of materials wasted in production)</u>		<u>\$465,685.35 (Standard)</u>	
<u>\$241,321.68 (Standard)</u>		12. Making deliveries on time	92.30 per cent
		<u>4887 orders shipped on time</u>	
		<u>5296 (Standard)</u>	

Policy	Rating	Policy	Rating
General Management and Finance Phase		8. Efficiency of net profits in providing for return on investment, interest on loans, and repayment of bond debt:	
1. Stability of raw materials inventories	91.07 per cent	For period: Jan. 31 to Dec. 31, 1928	236.0 per cent
8.93 per cent deviation from standard of \$21,730.00		\$43,832.06 (Accumulated net profits)	
2. Stability of finished goods inventories	17.22 per cent	\$18,600.00 (Accumulated debt)	
82.78 per cent deviation from standard of \$45,000.00		For period: 3 years, 8 months ending Dec. 31, 1928	167.0 per cent
3. Stability of direct labor charges	94.62 per cent	\$120,676.44 (Accumulated net profits)	
5.38 per cent deviation from figures taken from budget of varying sales		\$73,905.00 (Accumulated debt)	
4. Stability of direct material costs	99.35 per cent	Development Phase	
.643 per cent deviation from figures taken from budget of varying sales		1. Growth of sales for period	Percentage Growth 47.60 per cent
5. Stability of overhead charges	94.41 per cent	\$150,598.97 increase over sales for previous period	
5.59 per cent deviations from figures taken from budget of varying sales		2. Growth of net profits during period	38.40 per cent
6. Stability of net profits	74.92 per cent	\$12,163.16 increase over net profits for previous period	
25.08 per cent deviation from figures taken from budget of varying sales		3. Increase in sales value of maximum production for period (Jan. 31, to Dec. 31, 1928) due to added equipment during this period	
7. Cash position to meet current expenditures	112.89 per cent	No new equipment; effect on sales	0.00 per cent
Cash on hand (by month)		Effect on net profits	0.00 per cent
plus loan factor times Accounts Receivable (by month)		4. Increase in sales value of maximum production due to increased sales value on products	
Accounts Payable (by month)		\$23,284.27 Increase in sales	5.00 per cent
		Effect on net profits	48.75 per cent
		5. Reduction of manufacturing costs due to lowered costs of materials, labor and overhead	

(Continued on page 187)

Personality Difficulties of College Graduates¹

Suggestions Concerning Causes and Means of Eliminating Them

By SAMUEL S. BOARD

Director, Yale Graduate Placement Bureau, New York

IT IS with some diffidence that I approach the subject assigned to me this evening. The bureau of which I happen to have charge has been in operation only three years and there has not been sufficient time as yet to secure data to justify any sweeping conclusions. There are some impressions, however, gained through the intimate contacts of this period which may be of interest.

Before proceeding with these, I should like to give my definition of personality. Following somewhat closely on Webster's definition, though not quoting it verbatim, one might say that it is the sum total of those distinguishing characteristics of mind and body which differentiates one person from his fellows of the same general group. The definition of this group in some measure defines the qualities which are pertinent. If everyone were a college graduate from the same general environment there would be some characteristics which could not be considered a part of the individual's personality simply because they would be common to all. If, however, we included in the group a variety of people of the same race but of varying social and educational backgrounds these characteristics would stand out prominently as personality factors. Such group characteristics are likely to disappear through increased contact with non-college men or a varied environment. I think it is safe to say that the personality difficulties discoverable in men more than five years out of college do not differ greatly from those of non-college men. They may have the warpings of personality which come from extreme introversion, the feelings of defeat which tend toward a paranoiac condition and the lack of effectiveness which results so frequently from intimate contact with a dominant personality. These may be intensified by contrast with the dreams and aspirations which come during college days but otherwise

they do not differ from the difficulties which are discoverable in other adults. When we consider the period covered by the first five years after college, however, we do have certain personality difficulties which are perhaps distinguishable as applying chiefly to college men. A discussion of these can best be approached through a review of the underlying and responsible conditions involved rather than through a detailed description of their manifestations. These are varied but quite easily recognizable by anyone familiar with the recent college graduate.

Certainly one of the underlying conditions is a mental instability. College work for most men is a broadening process. Whole new fields of knowledge have been presented for their consideration. There is the opportunity to take part in varied activities; the chance to engage in sports actively; to hear good music; to indulge in serious or flip-pant discussion and to engage in manifold social activities. As a result most college graduates seem to have a secret but sincere conviction that they can do almost anything which they really wish to set their hands to. Coupled with this is a feeling of dismay at their lack of real knowledge of the field of work into which most of them are being thrust. As a result they fail frequently properly to present their abilities and on the other hand are almost as frequently considered "high hat" and presumptuous by their employers and fellow workmen. Naturally this emotional seesawing produces a mental instability which is always unfortunate and usually makes the social side of adjustment to work difficult.

Contributing further to an attitude of reserve is the desire not to seem "collegiate." Among the graduates of Eastern colleges at least, the buffoonery which is so common in the movies of college life and which is the butt of so many jokes in comic magazines has resulted in the average college graduate's being extremely anxious not to appear obtrusive or different from the average well-bred

¹From a lecture given at the Town Hall Club, New York, April 16, 1929, as part of a symposium on "Personality," under the auspices of the Association for Personality Training.

person. He dislikes exceedingly, for instance, to talk about himself even when seeking a job. He does not unlimber with strangers at all. This quality almost seems related to the usual desire of brides and grooms not to be picked out as such. Even if they may desire passionately to be different they do not wish to appear so! And this additional diffidence is interpreted as "high-hat."

Another very widespread condition among recent graduates comes directly from attendance at college and is both a very common cause of changing jobs and a reason for moodiness. This is the failure to continue mental activity after leaving college. Most of us are familiar with the results among college athletes of neglecting their activities in later life. Lung cells and muscles which are not used deteriorate, are especially subject to disease and are sometimes the cause of early death. Somewhat the same thing happens on the mental side. Even the laziest of college students has a continuous procession of new problems presented to him for solution while in school. When he gets out into business, his jobs provide new problems for a few months and then becomes routine. Ordinarily a man would look around for new things to think about at that time, but frequently the college graduate expects either the job or someone in the company to do this for him. If it is not done he becomes restless, moody and sick of his job and sometimes quits for no other reason. He just "does not like his work any more."

This is often aggravated by environment. Starting salaries do not provide for any of the luxuries of life in any event and may in addition have to be stretched to pay for college obligations or to help out at home. As a result men just out may be deprived of social contacts through clubs; they usually cannot afford the good music which they have been accustomed to hearing and may have no introduction to social circles in the strange city in which they start work. Such a condition helps to intensify the mental and social starvation which sets in due to lack of mental stimulus on the job.

This last condition seems a reflection on the university and the employer as well as on the man. If our universities are going to develop in men a taste for literature, for the solution of problems and for the appreciation of art, they ought also to teach their graduates the art of finding these privileges inexpensively after they get out. If a non-

college man wishes to be cultured he usually has to discover the sources of culture himself and in the ordinary environment. If the secret of learning is not to stuff one's head with a heterogeneous collection of facts but to discover the means of getting information when it is needed, education would seem to be deficient when the ability to do this in other environments is not developed also.

My feeling toward the employer's responsibility in the matter is less positive. He usually just does not understand. In years past, however, when business was done through smaller organizations, it was the gracious custom of many heads of businesses to introduce young employes, if they were at all acceptable, to social and business circles where they could find companionship without too much expense. Today management is so depersonalized that this "goes by the board." Frequently the employer lives in a suburban community whereas the young man may have to find a room in the city itself. As a result the beginner is likely to feel even more acutely that nobody is interested in him and to withdraw almost entirely into communion with himself or a small group of other men similarly situated. In many of the better shops employers take considerable pains to see that beginners are oriented properly within the shop. A little more effort spent in social orientation without might pay.

My own remedy for this difficulty is extremely simple but usually effective. I try to present the situation to the man as an opportunity to take the initiative and become socially independent. In the first place, this involves laying out a course of study for himself and approaching his thinking about his job from a new angle. Perhaps it may mean studying the difficulties and problems of his superiors and planning solutions which he would apply if he were in their place. Sometimes the most fertile field is that of the problems of his fellow workmen. Again it may be most profitable to study the industry as a whole; anything which will increase his knowledge of the business and allow him to develop along his own lines. The second step is to center his social attentions on studying the interests and activities of the new social groups with which he comes in contact. This again helps to take him out of himself and to broaden his social knowledge as well as to counteract abnormal tendencies toward introversion.

Though it would be easy to prolong a discussion of these difficulties of the normal college graduate two other problems should be mentioned briefly before I close. The first is that involved in the tremendous emotional strain with its resulting personality difficulties caused by expulsion from college or the necessity of quitting under compulsion of various sorts. Occasionally this will make a man and he will go forth determined to show the world that it was not significant. Such a feeling may be a tremendous impulse toward eventual success. More often the emotional upset involved creates a condition which results in a definite feeling of inferiority or the development of a feeling of persecution which may grow into paranoiac tendencies. Dean Mendell of Yale College has taken one step to avoid this latter state in declaring definitely that except for the most serious crimes he never closes the door absolutely against a return. The very thought that a man can return at some later date if he can sufficiently change conditions is frequently enough to prevent the extremely unfavorable reactions. This whole question of the future of college drop-outs would, however, seem to be a subject about which we need to make an intensive investigation as a means of avoiding the creation of large social ills.

The second problem is that of the boy who comes from a limiting social environment, goes to college, does the work but lives home or works so much of the time that he has no time or opportunity for the normal social contacts. Such men frequently come out with personality difficulties of a marked degree. They wish to be recognized as college graduates and to assume social and business positions ordinarily open to such graduates, and yet in their college work they have definitely failed to secure that ease of manner and ability to enter into social discussions and activities which is considered a by-product of a college education. They have been educated out of their former environment, and perhaps their parents and relatives have sacrificed to take them out of it, all to no avail. Such men are doomed either to failure or to a revolt which may make them a definite menace to organized society. The answer to this question is not easy to find. We do not wish to deprive them of opportunity they or their parents may have come to this country to find, and yet something needs to be done. It is literally "education gone wrong." One

of the things which might be done is to be sure that such men are carefully interviewed by a competent person and led to see that classroom study is only one phase of the process; unless they can qualify for other activities and find time for them they might better get their further education in other ways. I must confess, however, that I would not want the job of telling them this any more than I covet the job of telling them the truth after they get out, and this occasionally falls to my lot.

In conclusion I would like to add that it is my firm conviction that the present apparent tendency to consider the college graduate as a person somehow set a little apart from the ordinary crowd may have extremely unfortunate results if it creates any feeling that they ought to or should have special consideration. If instead we could only dwell on the fact that greater opportunities for education should invest them with a greater responsibility for leadership and individual initiative in meeting discouragement and difficulties we should both help them materially and release energies which frequently are dissipated. If our bureau or any other effort to solve these problems is a crutch for the normal or uninjured individual it might better be discontinued. We hope and believe it is not, but that it can be a source of information and a means of tapping the reservoir of common experience in such a way as to allow men to more effectively solve their own problems.

Scientific Management in Japan

An Address at a Meeting of the Japanese Branch
of the Taylor Society, Imperial University
Club, Tokyo, February 9, 1929¹

By HORACE KING HATHAWAY

SEVENTEEN years ago scientific management in Japan had its beginning when Dr. Taylor's "The Principles of Scientific Management" was translated into your language by Mr. Hoshino. I recall the great pleasure and satisfaction that this event afforded Mr. Taylor, a pleasure and satisfac-

¹Submitted by Miss Hanako Hoshino, Secretary of the Japanese Branch of the Taylor Society. It is reported that Col. Hathaway's sojourn of several months in Japan, incidental to a trip around the world, was a period of continuous lectures, consultations and festivities, so great is Japan's interest in scientific management and so winning is the Hathaway personality.

tion in which all of those associated with him shared. This translation must have made a great impression, for within a year Japanese students, industrialists and educators began to appear at Mr. Taylor's house to discuss the subject and to call upon me at the Tabor Manufacturing Company to see the practical application of the principles and methods of which they had read or which they had heard described.

At this point I want to pay a tribute to my dear friend and associate, that great engineer, Mr. Wilfred Lewis, president of the Tabor Manufacturing Company, whose interest and unswerving faith in Taylor's work made it possible to first work out, develop and refine much of the technique and mechanism essential to the successful application of the principles of scientific management, and then to afford those who were interested an opportunity to see and study this demonstration.

The Tabor installation was the first complete, well-rounded and co-ordinated application of Taylor's plan of management and notwithstanding defects, perhaps visible only to ourselves, was for many years regarded as a model. Not only did we have there a steady flow of casual visitors who spent a few hours or a day, but we had men from almost every civilized country who spent months and even years in studying the Taylor principles and practices.

Had Mr. Lewis contributed nothing more to the cause of scientific management than to permit his company to be used as a laboratory, demonstration and school, the industrial world would owe him a great debt.

In 1912 as a result of interest aroused by my lectures at New York University, there came to the Tabor plant two young Japanese students who spent the greater part of their summer vacation working and studying in the shop and planning department. These two men were Mr. H. T. Goto and Mr. S. Omori. Mr. Goto later returned to Tabor for further study. I greatly regret that I have since lost track of these young men.

Among those who followed them, spending varying periods of time, were such men as Mr. Shigeo Kato, Professor Y. Kunimatsu, an outstanding exponent of scientific management in Japan, who honored me beyond my deserts in dedicating to me his recently published book on scientific management; Professor R. Yoshida, of Waseda Uni-

versity; Mr. Jokichi Watanabe; Mr. J. Hashimoto, a promising young man who not only worked in the shop and planning department but played on the Tabor baseball team as well; a young member of the Mitsui family who, if I remember correctly, was studying mining engineering; and many others including men prominent in governmental, industrial and educational work.

This interest in scientific management was not limited to those who visited the United States, as is evidenced by correspondence with such men as Professor T. Miyajima of Waseda University and Mr. K. Abe, a graduate of Stevens Institute—the same school of engineering from which Mr. Taylor was graduated.

The scientific management movement is indebted in many ways to Mr. Taro Isshiki, who while living in America became a friend of Mr. Taylor, and who, until the war terminated its activities, was the member in Japan of an international group known as the "Taylor Co-operators," formed after Mr. Taylor's untimely death for the purpose of carrying on so far as possible the work that Mr. Taylor did after he reached the point in his career when, as he expressed it, he "could no longer afford to work for money." The work of the Taylor Co-operators has passed on to the Taylor Society, whose activities here are so ably conducted by Mr. Ueno—the "Dr. Person of Japan"—to whom I am most grateful for making my visit so interesting and enjoyable.

In passing I should like to say that while this is my first visit to your country I did not feel in coming here that I was going to a foreign land but merely to another part of my own that I had not yet seen. This feeling has grown and been justified by the courtesy, the spirit of fellowship and kindness that I have universally experienced among Japanese people. From the moment I embarked on a Japanese ship I was made to feel at home.

To me as to all others who share and are influenced by the spirit of unselfishness that was so characteristic of Mr. Taylor, it is most gratifying that the interest in scientific management has survived through the demoralization caused by the World War and the great disaster of 1923. The seed planted during the period between 1911 and the war did not fall on barren ground.

At present and perhaps for some time to come, because of a surplus of labor, limited markets and

low wage rates, the application of scientific management may be confronted with obstacles and may not seem to be a matter of vital importance either socially or economically. The great problem for the present may appear to be one of distribution to a greater market. Partly, and perhaps largely, this market may be found abroad, but as the demand or desire for a higher standard of living among the great masses of your own people develops, as it has in the United States, particularly during the past decade, I venture to predict that a tremendous market will be found right here in Japan.

In America it is today almost impossible for owners to rent houses or apartments without modern heating, modern plumbing and other conveniences. The vacuum cleaner has displaced the broom; the workman is so well dressed that it is difficult to distinguish between him and his employer; the radio and the automobile are regarded as necessities.

In Japan the motor car is crowding out the "rickshaw" just as it has crowded horse-drawn vehicles off the streets in America. But a few years ago the small fishing boats in San Francisco were propelled by sail, today they are all equipped with motors and a similar change is, I understand, taking place in your own vast fishing fleets. On the canals of Tokyo one sees barges, laden with sand, stone and other commodities, being propelled by men with oars or poles. I venture to predict that they will sooner or later be equipped with motors, or towed by motor tugboats. Simple movements such as these have a far-reaching significance, for they not only create new business in themselves but lead to other improvements. As one thing is brought up to a higher level it creates a desire or necessity for bringing other things up to the same plane.

In America we may have gone too far in our quest of enjoyment, of convenience, of comfort and emancipation from physical effort. We may have sacrificed too much to the automobile, the radio, the movie and other doubtful forms of enjoyment. We may have gone too far in the adoption of labor-saving machinery in the factory, the office and the home. We may have gained time only to waste it. My point may be illustrated by citing instances such as I have seen in offices in America of a clerk walking across the room to add on a machine a column of three figures or an executive calling in

a stenographer to dictate a ten-word memorandum to a person seated in the room next to him.

I trust you may not consider me reactionary in warning you against the too ready assumption that a change from existing methods or equipment to something newer or different must invariably prove to be advantageous. Particularly if the full possibilities of the old may not have been developed. In our Bible it is said, "Prove all things, hold fast that which is good." This Mr. Taylor preached.

Getting back to my subject, emphasis at present lies upon the problem of distribution—marketing or finding an outlet for the potential producing power of Japanese industry. In part this is dependent upon three things:

1. Increased earnings or higher wages for Japanese labor, coupled with an increased consuming power growing out of a desire for more and better things;

2. Lower costs—essential to the development of both domestic and export trade; and particularly—

3. *Higher quality.*

Good-will abroad, such as is the outgrowth of close individual friendship, mutual confidence, understanding and esteem, is most essential to the development of export trade. In America there is a great market for many products which Japan is well adapted to supply. It may well be that Japanese branch factories or affiliated companies can advantageously supply the Japanese and Oriental market with many products typically American, and that in co-operation and affiliation, rather than in imitation and competition, with the American manufacturers of such products, may lie success. Certain American companies have started to manufacture in Germany not only for sale in Europe but in South America and the Orient as well. Why not in Japan?

During the past year I was rather shocked to learn that a well-known Japanese company was putting on the market an imitation of an article, manufactured by a company with which I was associated, for which patents had been applied in Japan. Why might not they or some other company have arranged with the American company in question to produce the genuine article, availing themselves of its experience and aid? In a plant recently visited I saw machines which had every appearance of having been built by a company with

which I was at one time connected—they proved, however, to be imitations. Here again mutually advantageous arrangements might have been made for a Japanese company to serve as an Oriental manufacturing branch of the American company and to produce for a considerable part of the foreign market. Isolated cases of this sort have been responsible for a more or less prevalent misconception of Japanese character and business ethics.

I mention these two instances not because of any personal feeling of resentment but rather to call to your attention an unsound policy and mistaken practice that should be avoided and discouraged in favor of a course of action better calculated to promote good-will and mutually advantageous relations with American industry. The Ford and General Motors plants in Japan are, in a way, examples of what I have in mind.

At any rate I am confident that adequate markets may and will be found, and as this is accomplished, the emphasis will be transferred to the problems of production.

It is not too soon to anticipate and prepare for this, and as to the manner of procedure I offer the following suggestions:

1. Send to the United States carefully selected young mechanical engineers—who speak English—to study scientific management in plants where it is properly developed and practiced. Some of these young men should specialize in certain features of the system. This would be resuming where the chain was broken during the war. It was with great pleasure that last summer I assisted a young Japanese engineer, who came to America with letters from two of my best friends in Japan, to spend an ample period of time in a plant operated under scientific management and to supplement the practical experience so acquired by attending what I believe to be the university best qualified to teach scientific management. I earnestly trust that there may be more.

2. Establish in Japan several developments of scientific management, in a representative variety of industries, which may serve as models and which may be utilized as was the Tabor Manufacturing Company, and in lesser degree other American companies, as laboratories and training schools. It would be desirable if in connection with such development there could be one or more properly qualified American engineers collaborating with the

best available talent that can be found throughout Japan.

Something of this sort was contemplated by the Department of Commerce and Agriculture and was discussed with me by Mr. Nishi, your Commercial Attaché in New York in 1921 or 1922. Nothing, however, came of it; I believe through failure of the Diet to appropriate the necessary funds for the undertaking and because of the earthquake and fire of 1923.

Needless to say, your friends in the United States will be only too glad to assist so far as we may be able in the furthering of the means I have suggested for the promotion of scientific management in Japan—or along any other lines.

In closing I should like to say a word to the younger men of the scientific management movement. While we use the term scientific management to designate the managerial practices of Dr. Taylor and the principles growing out of them, in many respects and in varying degree it is the ideal rather than the attained application that is scientific. Our approach to the problems of organization and management may truly be scientific, as is also the case with respect to the study and analysis of work and various other elements that make up the system through which the principles are applied.

Most of the work of a really scientific character was done by Taylor and his earlier associates; much more still remains to be done in connection with such things as time study or the analysis of work, selection and training of workers, the art of working, the materials used in various industries, and so on.

It is to the younger men that we must look for a resumption of such scientific development as, for example, that typified by Taylor's studies of the transmission of power by leather belting and the care and maintenance essential to its most economical and efficient use; and the great work of Taylor, Barth and Gantt described in Taylor's treatise "On the Art of Cutting Metals." Even in the latter much remains to be done.

Taylor stated that it should be the aim and ambition of every young engineer to add something to the knowledge of his profession. Men often do their best work during the earlier half of their careers—to be sure, with the concurrence, encouragement and guidance of older men, which is es-

sential—but much of the advance in engineering is a result of the work of young men whose ideals and ambition carry them through the discouraging period when reward may be long deferred, to ultimate success and recognition.

For years I have been advocating, as perhaps the most important mission of the Taylor Society, the promotion and guidance of constructive work such as that here briefly suggested, and with this in view I presented some time before the World War, at a meeting held, I believe, in Boston, a paper outlining a proposed plan of activity for the Society in which the need for such work was emphasized. This paper may have been ahead of its time, and the time may not yet have arrived in Japan for such undertakings, but it is not too soon to begin thinking about it and paving the way for it.

In this respect the time may come when America will receive from Japan as much or more than it has given, and fortunately such exchange is not subject to the restrictions that hamper trade and political relations.

Nothing, I am sure, could afford to my great master Mr. Taylor, were he alive today, and to his associates and followers, greater pleasure and satisfaction than to see scientific management serve as a means to strengthen the bonds that have, since the time of Commodore Perry, joined our two great nations in friendship, and in political and economic relationship.

(Continued from page 159)

leisure; that unemployment can accompany intense activity and prosperity; and that "the outstanding fact which is illuminated by this survey is that we can not maintain our economic advantage, or hope fully to realize on our economic future, unless we consciously accept the principle of equilibrium and apply it skillfully in every economic relation." This last generalization alone, if so seriously entertained that it becomes a stimulus to action, is an adequate reward for all the labors involved.

The phases of economic life which were examined by the survey staff are indicated by the following titles; changes in new and old industries; technical changes in manufacturing industries; the changing structure of industry; construction; transportation—railways and shipping; marketing; labor; management; agriculture; price movements and related

industrial changes; money and credit and their effect on business; foreign markets and foreign credits; the national income and its distribution.

It is no little gratification to those who are particularly interested in scientific management to discover that these two volumes are essentially a report of the influence of scientific management in American industry. It is an interesting experience to substitute throughout the report the specialized terminology of scientific management philosophy for the more general phraseology identifying equivalent concepts.

And there is likewise no little gratification to discover that the publications of the Taylor Society have made their contribution as sources of information, as is evidenced by many foot-notes. In the chapter on management is a sentence which gives us—who have tried to be pioneers—a peculiar pleasure: "A widespread interest in marketing methods cannot be said to have come with the turn of prices. . . . As early as October, 1920, however, articles suggesting a more scientific viewpoint on marketing appeared in the Taylor Society BULLETIN." On the other hand, there are still some who believe that the Taylor Society has never had other interest than in the field of production!

(Continued from page 172)

tions in this industry were enthusiastically received in economic circles and highly evaluated by a conference having for its aim the rationalization of the textile industry. The trade unions have also favored the work of the Institute and supported its scientific activities. It has recently concluded a series of agreements with different textile industries. The tendency of enterprises to put the methods of the Institute into practice is so great that the question has come up as to the advisability of concluding a general agreement with the whole of the Soviet textile industry. This agreement would bind the Institute to train and organize labor in these enterprises in two years' time.

Men trained in the Central Institute bring into the factory not only their skill but also new methods of work, management and organization. Owing to the system of the Institute they work precisely and swiftly, are careful, clean and orderly. They are distinguished by the economical use of material and high quality of their production.

Labor—Production—Co-operation

A Letter of William Green, President of the American Federation of Labor, to the Delegates of the Fourth International Management Congress, Paris, June 19-23, 1929

WE MUST await the return of the delegates of the Taylor Society before we can give a satisfactory account of the Fourth International Management Congress held in Paris, June 19-23. However, we are able to present the complete text of what was the outstanding item of the program—a letter read by Morris L. Cooke, Past President of the Taylor Society, on behalf of William Green, President of the American Federation of Labor.

Washington, D. C.
June 7, 1929.

To the Delegates to the
International Management Congress:

On behalf of the trade union movement of North America I send you our greetings and express our hope that your deliberations may be mindful of the interests of all groups that management policies affect.

Because management policies affect workers so directly, we feel that Labor should be in a position to present in advance of their adoption whatever light our experience may give as to the practicability of policies and their effect upon morale and production.

Labor has an interest in increasing production because only out of increased output can come sustained raises in the standard of living. Trade unions are ready to co-operate in promoting economies in production when there are set up the agencies that assure them justice and equity.

The American Federation of Labor recognizes that the interests of wage earners are interdependent upon the interests of all other groups associated together in production enterprises and that progress for Labor is inter-related with progress of the community and the nation. If industry is to maintain production, if prosperity is to continue for the community and the nation, wage earners and other groups must have a sustained purchasing power.

With mass production industries turning out huge outputs of necessities and luxuries, unless

the masses of the population have money to buy and time to use, a surplus accumulates which brings depression.

With industrial progress and technical advances, responsibilities resting upon management grow heavier. Upon management rests the major responsibility for eliminating wastes in production, for assuring steady employment for those employed, for steadily increasing wages as productivity increases, for planning in advance for workers displaced by machinery and technical change. Workers also have a responsibility for these problems which they can undertake through their trade unions when the agencies and channels of co-operation have been established.

Labor realizes that its constructive opportunity comes when mechanical power and machinery supply the tools of wider effectiveness and make possible new skill that makes greater demands on judgment and information.

Every group in industry must keep up with the pace and direction of progress if obstacles to progress are to be avoided. The workers should be invited to give management the benefit of their judgment, advice and experience in dealing with industrial problems which affect their mutual interests. Not only should they be given the widest opportunity to render collective service but, in addition, they should be given the opportunity to make collective suggestions. Management should facilitate such procedure.

The primary force in progress is mental power. Industry will make its greatest progress when the creative capacity of all in industry is released in work.

Respectfully submitted,
(Signed) William Green
President, American Federation of Labor

(Continued from page 179)

Policy	Percentage Growth
\$19,343.24 Savings representing an increase of net profits in (4) of	29.60 per cent
6. FORECAST OF NET PROFITS FOR 1929—\$42,627.51	97.25 per cent

**Conference of the International
Industrial Relations Association
Schloss Elmau, Oberbayern, Germany
June 26 to July 3, 1929**

AT THE Conference of the International Industrial Relations Association (I.R.I.) held at Schloss Elmau, Oberbayern, Germany, from June 26 to July 3 and attended by sixty-three representatives from fifteen different countries, the subject of discussion was the methods of promoting satisfactory human relations in industry which is rationalized or scientifically managed. A report issued by the Association states: "Every section of industrial thought and experience was included—production managers, research workers, employers and employes. These were brought together by their keen interest in the world-wide need for raising the standard of life by increased production and wider distribution of goods and services.

"Scientific management was described in the widest possible sense, based on the best practice in Europe and the United States, as that management which would best co-ordinate all activities in the workshops and in an industry to the end of producing foods and services with the least waste of human effort and material resources. The evils which experience showed have followed from various systems of intensifying labor and increasing speed were shown to be due to misunderstood and misapplied methods of management, which are not truly scientific. It was pointed out that the economic crisis in which all industrial countries are more or less involved can only be met by a fuller application of science to industrial problems."

The officers and members of the Executive Committee of the Association which has its headquarters at The Hague, Holland, are: President C. H. van der Leeuw, Partner Messrs. de Erven de Wed. J. van Nelle, Rotterdam; Vice-Presidents: Miss Mary van Kleeck, Russell Sage Foundation, New York; Erich Lubbe, Vorsitzender des Gesamtbetriebsrates der Siemens-Schuckert A.-G. Berlin; Miss M. L. Fledderus, The Hague; Treasurer, Dr. Meyer zu Schwabedissen, Direktor in Fa. Bertelsmann & Niemann, Bielefeld, Germany; Members of the Executive Committee: Dr. A. Correggiari, Consultant on Industrial Relations, Fabbrica Italiana Magneti Marelli, Milano; Hugo von Haan, International Management Institute, Geneva; Dr. George H.

Miles, National Institute of Industrial Psychology, London; Spencer Miller, Jr., Workers' Education Bureau of America, New York, and Dr. Frieda Wunderlich, Bureau für Sozialpolitik, Berlin.

**Industrial and Scientific Exposition
Liege, Belgium, 1930**

In 1930 Belgium will celebrate the centenary of its independence by important industrial expositions.

The Industrial and Scientific Exposition will be held at Liege and the sponsoring committee has had the happy idea of setting aside a special place for the problems of scientific management, personnel management, planning and the selection and direction of workers. Demonstrations of the progress which has been made in methods of research, psychological testing, scientific organization of work, personnel management and planning will be made possible by the collaboration of manufacturers and private laboratories.

Information concerning the exposition may be had by addressing Mr. Lucien Wellens, Secretary of Class 94. D. 11, rue de Seraing, Liege, Belgium.

Back Numbers Wanted

The following numbers of the Bulletin, which are out of print, are in demand for completing sets for libraries, etc. We shall be glad to pay fifty cents each for any or all of these numbers:

- Volume I, Nos. 1, 4, 6
- Volume II, Nos. 1, 3
- Volume III, Nos. 2, 3, 4, 6
- Volume IV, No. 6
- Volume VI, No. 5
- Volume VII, No. 4
- Volume XI, No. 1
- Volume XII, Nos. 4, 6

Reviews

Labor Management. By J. D. Hackett, D. Appleton and Company, New York, 1929, pages 681.

Mr. Hackett's contribution is a summarization and integration of material which is in the main familiar to one who has been in touch with the literature in the general field of personnel administration or industrial relations

appearing in the business periodicals and personnel books of the past decade.

The volume is handy for reference because its scope is broad; it includes much significant data, and it is endowed with practical common sense throughout.

HERMAN FELDMAN¹

Human Relations in Railroading. By Hayes Robbins, General Publishing Company, New York, 1927, pages xvi, 143.

"Human Relations in Railroading" is the second book to appear within recent years, devoted specifically to the personnel problem of the railway industry. Thus far this particular industry seems to be the only one whose human relations have been subject to special study and treatment in books, which fact further testifies to the peculiar significance of the human element in this industry.

The author of "Human Relations in Railroading" seems to approach his subject more subjectively than do most writers of similar treatises. He draws his illustrations from experiences within the last four years "on a single transportation system, because, and only because, of the writer's close acquaintance with the circumstances." Frankly, it is to be regretted that Mr. Robbins, whose style of writing is engaging and who is not unsympathetic to the human element in industry, did not take cognizance of the other developments in human relations to be found on so many of the railroads of the country. Unfortunately, the railroad with which Mr. Robbins has had most to do is apparently not one which has profited by the many reforms in human relations which Mr. Robbins expounds, to judge, among other things, from a special report recently made by the Public Service Commission of New Hampshire to the State Legislature. The fact that this is so testifies to the one outstanding weakness underlying the program advocated by Mr. Robbins for improving human relations on our railroads. Apparently, the chosen representatives of the railroad's employes and their unions in no instance were made a party to the reforms which the management tried to inaugurate. In an industry whose employes are so well organized, where the unions are so powerful a factor in the lives of the men, attempted improvements in the human relations which ignore these unions will sooner or later get into difficulties. This management went out of business and with it virtually all that Mr. Robbins tells us about so entertainingly.

Many of the betterments which he describes are desirable. No one can dispute the value of education either to the worker or his foreman, and means for mobilizing suggestions are likewise possible of benefit to both employe and management. But to the great majority of railroad men the idea of buying a worker's ideas at prices ranging from \$2.50 to \$40.00 per is repugnant. In the first place, railroad employes as well as realistically minded railroad officers know full well that suggestions cannot be intelligently

valuated, everything considered. In the second place, if the incentive for making suggestions is nothing better than a petty individual financial reward, it will have but a very narrow appeal.

What Mr. Robbins has to say about "employes" or "company magazines" emphasizes their limitations as devices for influencing human relations on our railroads. Stabilization of employment in the railway industry, in the last analysis, is the heart of the railway morale problem, yet Mr. Robbins has comparatively little to say on this subject as compared with "insurance and pensions."

In speaking of the responsibility of management in respect to the "personnel function," i.e., handling of labor matters, Mr. Robbins rightly cautions against the division of responsibility as between a "personnel officer" or "personnel department" and those charged with the actual responsibility of supervision. If a personnel agency is set up on a railroad it is better if it functions along advisory lines to the chief executive rather than that it attempt to handle or dominate labor relations. For after all, the chief executive cannot delegate or escape his eventual responsibility in these matters.

In conclusion Mr. Robbins mentions the desirability of a "service for reference and exchange" of information and experience concerning railroad personnel matters. He points to the activities of the American Railway Association along technical lines as an example of what might be done along personnel lines. The last words of the book, however, are devoted to "Panaceas and Possibilities." Here Mr. Robbins takes stock of the various general labor relations prevailing in the industry today, especially in the light of the Railway Labor Act. In addition to making the point that "morale suffers less from the occasional big jolt than from sand in the bearings of every-day operation," Mr. Robbins also states that the real problem on our railroads centers about wages. And here, he goes on to say, "the immediate interests of managements and men stand opposed." Of recent years, however, the irreconcilability of the interests of men and managements, when it comes to wages, has somewhat modified in the face of the realization that purchasing power and producing power are correlated through the wage income of the mass of the country's workers. The practical problem is when best to adjust wages and by how much. Mr. Robbins' final suggestion to meet this problem is perhaps the best contribution his book makes to human relations in railroading. He believes that "the next objective in industrial relations is something quite beyond rules and schedules and meeting grievance committees: nothing less than the all-round participation of informed and intelligent men with a share and a sense of responsibility to the enterprise in which their own welfare is staked and, through it, to the public it serves."

It is significant that the standard organizations of railroad labor, especially those of the maintenance trades, are definitely committed to the very attitude advocated by Mr. Robbins.

OTTO S. BEYER, JR.²

¹Professor of Industrial Relations, Amos Tuck School of Administration and Finance, Dartmouth College, Hanover, N. H.

²Consulting Engineer, Washington, D. C.

The Idea of Social Justice. By Charles W. Pipkin, The Macmillan Company, New York, 1927, pages xvii, 595.

The most constant thing in life is change. The period covered by this volume—1900-1926—was a period of great change the world over. This first quarter of the new century is the most complex and epochal of recorded history, and most difficult of accurate analysis, just interpretation and constructive direction. No contemporary analyst has the wisdom to discern with certainty the true character of such an eventful period. What the world is struggling toward is a great *synthesis*. The younger Mill has wisely said that no one's synthesis can be more complete than his analysis. Never, perhaps, has more earnest analysis been devoted to any theme than has been given to the question: What is social justice? The problem is as old as history. It will doubtless continue to command the attention of the best minds, for life is becoming increasingly social and the essence of justice consists in right human relations.

In view of the age long struggle of the race to express the idea of justice—from the Republic of Plato to Professor Pipkin's six hundred page volume—it is a striking commentary on the literature devoted to the idea of social justice that Professor Adams in his introduction to this work is impressed with the fact that "the present volume, based on patient investigation of the main sources of evidence, is the first attempt by a comprehensive survey to examine how the idea of social justice is finding new forms of expression in two of the great states of the world."

The *selected* bibliography at the close of the volume dealing with the subject comprises some four hundred works. Has Professor Pipkin found the key to unlock the age long riddle: What is social justice? by leading us to see that "the ideal is the truth of the actual"? He certainly has given us a masterly analysis of *life* in its most complex and determined effort to give order and cohesion to the idea of social justice through legislation, administration and the labor movement in two of the great states of the world—England and France.

"*The Idea of Social Justice*" is divided into two books—Book I opens with a survey of the English social movement. It sketches in outline industrial legislation and the growth of the labor movement, stressing the changing opinion reflected in the aims of political organization. This is followed by a similar survey of the French social movement. These introductory chapters furnish the background against which the author portrays the social legislation in England and France during the period 1900-1926.

Some 250 pages are devoted to showing how Englishmen have gained increasing control over their economic and social environment through legislation dealing with children and young people, through factory, shop and mining acts, compensation legislation, old age pensions and living wage measures, unemployment and national insurance schemes.

One of the most interesting parts of the entire volume (Chapters VII-VIII, Book I) treats in convincing manner

the politics of the English labor movement, from the point of view of the status of the trade unions, the Trade Union Congress and industrial unrest. The author closes this part of his analysis with the conviction that "Labor politics can be used to strengthen the constitutional guarantees of freedom, and promote conditions of good-will which will bring the state a larger liberty of action. Good-will can inspire a new allegiance which is surely needed by the state if its aims are to be social. . . . Labor politics . . . has come out into the open and never again can labor refuse to bear its share in the carrying on of the nation's business." (pp. 360-361).

Following the manner of treatment in Book I, Book II shows how Frenchmen through social legislation have steadily striven toward the ideal of social justice and moved toward a conscious goal by social organization and control.

Chapter XI of Book II is a survey of revolutionary syndicalism in France, with the view to pointing its meaning for the ideal of social justice. Democracy "is helped by every movement which brings more definitely to a place of first importance the individual rights within the community." . . . "whether or not revolutionary syndicalism has greatly helped the individual French worker to use his associative freedom more effectively yet remains to be seen. But it is true that the importance of the rank and file of the industrial workers and the collective power of the organized groups are today more widely understood." (p. 509).

The author's conclusion, treating Social Justice and the Individual; and Social Justice and the Community, compressed into twenty-five well reasoned pages, is the most interesting of the entire volume. No brief review can do justice to this striking summary. It well repays study.

Men have "constantly sought to redefine what justice is in their daily life of work and the social control of their institutions. The exercise of this capacity for justice is the source of happiness for good men and it is the foundation of order in the state. As they have aimed for justice they have found their duty as citizens." (p. 538. *Italics mine*). This quotation carries us to the heart of the author's unique contribution to the literature of social justice.

The whole volume is alive with the idea that individual and social justice is taking on a *new meaning because of a changed attitude toward human nature*. The individual in his *total* life relationships and *all his needs* must be understood before an adequate politics, ethics or justice can come forth.

"The will for the highest good and the sharing of a common purpose with men of good-will have remade the state."

In the attempt to see how effective industry, politics, and voluntary associated efforts have been in creating the "good individual" and the "good society," by making his ideal of social justice synonymous with *community good*, the author has made a distinct contribution to the literature of one of the most important problems now occupying the best thought of the world, and, in the words of Professor Adams, his volume deserves a generous welcome.

HENRY C. METCALF*

*Bureau of Personnel Administration, New York.

Making Goods and Making Money. By Horace Taylor, The Macmillan Company, New York, 1928, pages viii, 296.

The question which Professor Taylor has examined in this book is one which is crucial for scientific management. Were Adam Smith and his successors right in saying that in the business order a man freely seeking his own interest would automatically advance the interests of society, or were Ricardo and his successors (notably, in our own day, Thorstein Veblen) right in saying that by its enthronement of pecuniary motives the business order leads men to try to get something for nothing and hence creates an inevitable conflict between the individual and society? Specifically, does the pathway to wealth lie in making and distributing as many desirable goods as possible at a low price, or in restricting production, cheapening quality, and charging a high price? If the former is the case, the management engineer, who must in most instances be employed by the profit-seeker, may rest easy both that his future is assured and that his vocation is fruitful, but if the latter is the case, he either is likely to starve or to serve anti-social interests.

Mr. Taylor's theoretical analysis of the question results in the conclusion that each side is right, in a certain measure and in certain instances. There are conflicts between profit-seeking and service, but they do not arise from inexorable natural laws but from the cultural situation. There are also communities of interest between individual profit-seekers and society. How much of each exists depends largely on the situation. It is important, therefore, to examine the existing situation in the United States to see where the trend lies.

The result of this examination is, on the whole, cheerful for the management engineer. While revolution which would abolish the profit motive is both unlikely, and, for other reasons, undesirable, and while efforts to exert social checks on business through political agencies and moral influences are often abortive, there are strong tendencies in business itself which tend to harmonize making goods and making money. These include not only the familiar means of division of labor and the many succeeding devices both of machinery and management which lower costs and increase productivity, but basic economic tendencies themselves. Combination and integration of industry place a premium on the development of new products, the elimination of wastes, the regularization and standardization of production. Mr. Taylor lays a great deal of stress, in this connection, on one phenomenon in which Mr. Veblen saw only evil results. The tendency for fixed charges to become enlarged through greater dependence on capital equipment, and in other ways, was seen by Veblen only as a capitalization of profits by which the owners of industry would be able not only to get something for nothing but to get more and more for nothing. Mr. Taylor sees it also as an influence which leads business men to try to produce and sell more and more goods, often at reduced prices, in order that the fixed charges may be regularly

met. Profit margins are not, of course, to be identified with profit on capitalization. The latter may grow through a shrinkage of the former.

Mr. Taylor's conclusions apply, on the basis of the evidence he adduces, only to manufacturing industry in general; and he admits that they do not touch the existence of other serious problems such as the forcing of inferior products on the consumer or wasteful merchandising. They are limited also by certain monopolistic practices. While it may be profitable for a producer who controls his market to sell more goods at a lower price than fewer goods at a higher price, that is not necessarily the case. It depends, for one thing, on the elasticity of the effective demand for the specific product. As long as the demand is indefinitely expansible as the price falls or wages rise, it may be more profitable to lower prices and sell more goods than to maintain prices. But this is not always the case. Mr. Taylor's conclusions may not be stretched to a complete demonstration that under existing conditions Adam Smith is 100 per cent, or even 75 per cent, justified. They merely hold out substantial reasons for hope, and an encouragement to those many varied activities which do tend to harmonize making goods and making money.

GEORGE SOULE*

Banking Standards Under the Federal Reserve System. By Horace Secrist, A. W. Shaw Company, Chicago, 1928, pages xxxviii, 420.

This is an original statistical work dealing largely with ratios prepared from the official earnings and expense reports of members of the Federal Reserve system and with their condition reports for the seven-year period from 1919 to 1925 inclusive. The work contains some two hundred tables and fifty-odd charts. To review this work adequately in such a limited space is impossible, because, as the author says, this is not a work to be read and digested, but is rather a work of reference.

As a resume of what the work covers, the reviewer can do no better than to quote from page 3 of the book, where the author says this study "proceeds upon the following hypotheses: (1) that norms and trends of similar type characterize series of data reflecting bank operations; (2) that many of the series are inter-related; (3) that the norms, trends, and correlations obtaining are quantitatively measurable; (4) that a knowledge of them is of economic significance; and (5) that they are causally related to the operating processes of our competitive system. The problem attacked, therefore, is the verification of the truth or error of these hypotheses."

Quoting further, the author says on page 7: "Banks individually and collectively need standards or norms of operation which will serve as guides. They need also knowledge of trends and of the relative levels upon which banking in its various phases is carried on in different parts of the country. They need to know that forces are constantly in operation tending to bring rates of earnings,

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